The Builder.

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Society of Painter Etchers.

HIS Society, the intended formation of which has been before referred to in our columns, opened its first or test exhibition at the Hanover Gallery, 47, New Bond-street, this week. The exhibition included over 400 specimens of etching, many by names already well known in connexion with this or other branches of art, others by names comparatively unfamiliar.

Whether the exhibition can be said to have, so far, brought to the front any new talent of importance in the art, is perhaps the first question which the examination of it suggests. A large proportion of the best work appears to be by names already well known. There are, however, some contributions of very high character bearing names which are not familiar to us, among which may be mentioned first the fine and interesting series of etchings at Venice, by Mr. O. Bacher (Nos. 8 to 21). These exhibit illustrations not only of the glories of Venice, but of some of the back corners and alleys, and the everyday realistic life of the "Queen of the Adriatic." To the artist their special value consists in the fact that they are pure etching in regard to style. They are not hatched and finished up like engravings, but represent the effects to be obtained by the freely moving etched line, and by the effective picking out of the darks in the scene, leaving the lights nearly unbroken. This is the kind of work which represents, as we have before observed, the special value and power of the art of etching. It affords the opportunity of reproducing in considerable numbers a style of work which shows peculiarly the free impulse of the artist's hand and feeling, working in a method especially favourable to freedom of line, and entirely opposed to the necessarily more stiff and mechanical work of the engraver. Of course, etching has its positive and special beauties, even independently of any consideration of its reproducing power; beauties arising out of its peculiar and delicate tone, and still more out of the entire freedom of line which it permits and encourages; and these qualities differentiate it sufficiently from any other form of art in black and white. But we are inclined to emphasise the quality we have just referred to, the opportunity afforded by etching for the reproduction of copies of the freest possible artist's work, because it is in that quality that there resides the especial value of etching as compared with engraving; not necessarily (in every sense) its *greater* value, but its *different* value. If we turn to such etchings as those of Mr. Macbeth, which are in this collection (129 to 139), we find little to mark the quality of etching as distinct from engraving. These are very carefully finished and elaborated drawings, but artistically they might just as well be engravings: there is no quality or interest in them distinct from that of engraving; and as compared with engraving, such work has only, to distinguish it, the disadvantage that it will not print or reproduce so well, so often, or so easily as an engraving. It may be said that this is the work of the artist's own hands, just as much as other etchings; but in aiming at this finished surface work the artist deliberately throws away the very advantage and interest which etching possesses, of reproducing work which is the free expression of the artist's thought, uncontaminated by mechanical processes of shading and finishing which an engraver might execute just as well. This is an important point for consideration in reference to the question of the future establishment and artistic position of the Society. It would not be worth while to establish it, if the object were merely to show that artists can produce upon copper work similar to that produced by the engraver on wood or steel. Every one would naturally conclude that an artist can do so if he takes the trouble, but it is not making the best use of his gifts. There are other works in the gallery to which the same remarks might apply, though there are perhaps none which are so purely of the engraver's type as those which we have mentioned.

Coming back to some of the works in which the best qualities of etching are exhibited, we may mention those by Mr. Colin Hunter as the work of an artist whom we do not hitherto know well as an etcher. His few works show very fine artistic qualities, more particularly one of the smaller ones, called "A Wet Day," which is most masterly as an example of the way in which weather character, as one may say, can be conveyed in a medium absolutely without the power of realistic representation of tone or minute detail in a scene. A larger etching, "Towing Fishing-boats," an evening scene on a lake or river, where a crowd of small craft are dragged at all sorts of angles in the wake of a steamer receding from the spectator, is very fine, full of movement and of the sensation of light. Mr. Farrer is another etcher whose name we do not remember before, and whose work shows true artistic quality, "New York Harbour" (63) being especially noticeable. M. Buhot's very brilliant and odd work we have noticed occasionally in the Exhibition of Works in Black and White, where some of the etchings here exhibited have been seen. He is a true etcher, of most brilliant abilities, but there is a vein of morbid eccentricity running through all his work which leaves an unpleasing impression on the mind, and which, moreover, seems not free from affectation. The one entitled "Aux Champs Elysées" (146) is, in fact, only one remove from caricature. Mr. Bradley is one of our finest etchers, and contributes one work at least in his best style, "Toilers on the Lagune," a good illustration of his admirable treatment of water, which artists who work in true etching style sometimes go to the extreme of unduly neglecting, leaving you to imagine the water as merely a space reflecting the light. Mr. Bradley does not do this; he indicates the flow and movement and variation of the surface of the water quite sufficiently, but without attempting anything more than the free etched line (which he uses in the most artistic manner) can fairly accomplish; while he never works on the water so far as to lose light. One of Mr. Hook's etchings, "River Scene, Holland," has the same kind of excellence, and is a beautiful and most perfect little work in its way; others, such as "Mushroom Gatherers" (the original picture will be remembered at the Academy), are too much worked on, and look dull and loaded. Mr. W. W. Burgess shows a faculty for putting a great deal into an etched landscape without losing light, in his "Weald of Kent" and "Near the New Forest," of which the latter is the best; in the former he has somewhat lost the poetry and stretch of his landscape by too much detail of hedgerows in diminishing parallelograms. Mr. H. R. Robertson's "Rush Harvest," where a broad barge, laden with rushes, is swinging slowly down stream through a flat country, is an exceptionally successful work. One of Mr. Farrer's, which hangs apart from the others previously mentioned, "The Old Ferry Bell," should be noticed for its forcible effect and fine feeling, and as an example of the kind of subject for which etching is so valuable; it would hardly be worth while to engrave a subject of such slight materials, but it is well worth while to make a sketch of it; and if sketched on copper, it is worth while to have reproductions of it. Among the works in the same part of the room are two heads,—portraits of Italian women,—under the titles, "Assunta Fontanarosa" (202) and "Marietta da Napoli," which are remarkable as instances of beautifully fine work with the needle. At first sight they look like steel engravings, and might seem open to the charge which we have made against other works, of being merely engraver's work done with an etching-needle; but if closely examined it will be found that there is an undulating freedom in the lines of the hair different from that given by engraving; the shading is somewhat mechanical, but it is not over-finished; and it is something to see that such fine precision of line in shading and cross-shading can be attained with the etching-needle. Still, if we compare these drawings with the portrait-heads of Mr. Watts and Mr. Poynter, executed by Mr. Legros, we cannot help being conscious at once of the difference between finely-finished work of this semi-mechanical kind, and the work of a true and powerful artist taking up the etching-needle as

one form of expression. The portrait of Mr. Poynter (which was published, if we remember rightly, in the *Portfolio*), is a really grand little work, though on a small scale, and the artist whom it represents may be grateful for a portrait which seems to show not only his features but the mind behind them, the genius of the man. The portrait of Mr. Watts has some of the same characteristics, but it is not equal to the other. Equal to either of these in talent and artistic interest (except in so far as a buffalo is not so interesting an animal as a painter) is Mr. Heywood Hardy's portrait head of a buffalo swimming, which was in one of the Black and White Exhibitions, and is in divers picture-dealers' windows now. The strongly-marked animal character, the action of the head with the nose raised to clear the water, and the slight but sufficient indication of the movement of the water round the animal's neck, combine to make a most life-like and truly individual work. The lions by the same artist are hardly equal to this; but the dry-point drawing of a recumbent leopard, thin and lithe, and showing such possibility of activity in its limbs, is a capital drawing. Mr. Legros exhibits some landscapes as well as his heads, among which a slightly-touched river scene, printed in brown ink, "The Fishermen," is very charming in feeling. Mr. Seymour Haden is well represented by about a dozen impressions, including some work in his best style; of his great merits as a "painter-etcher" we have spoken fully on more than one other previous occasion, in reference to representative collections of his work. Mr. Jacomb-Hood's "German Emigrants at Liverpool" is a work worth attention as a study of character; his "Pay-day in a Manchester Cotton Mill" seems deficient in story and point, though some of the figures are expressive. An admirable life study by Mr. Poynter may be mentioned, little more than outline, a male figure seated. Among curiosities of the exhibition a French artist, Mr. Guerard, has thought it worth while to make an etching of a couple of wine-butts and a number of bottles, under the title "Mise en Bouteille," and he succeeds in making us think that there is character in bottles.

We may mention separately a few works the interest of which is especially architectural. Among these one of the most elaborate is Mr. A. H. Haig's fine and picturesque group of Mediæval buildings under the title "The Quiet Hour," which we imagine we have seen elsewhere as a water-colour, and liked in that form; but it is the sort of subject which is even better in etching. Mr. Kent Thomas sends two St. Alban's studies, one of which reminds us in style and execution of the Le Keux illustrations of Gothic architecture, which is in itself high commendation. Mr. Batley's designs for a staircase-head, and designs for needlework and hangings, are good in themselves and rich in effect, and interesting as examples of the application of etching to the illustration of that class of work. "Le Jube de St. Étienne de Mont de Paris," an interior view by M. Greux, appears to be a very highly-finished architectural etching, but it is hung too high to be properly seen. Several of Mr. Ernest George's architectural sketches hold their place well among works of this class.

We should not have omitted to mention that a considerable number of M. Tissot's etchings from his own pictures are exhibited. These are, however, so familiar to every one that they hardly call for fresh comment here. We have omitted to mention some views on Venetian waters by F. Duveneck (28, &c.), but these should certainly not be overlooked.

There is, no doubt, sufficient of good and really true etching work included in the exhibition to show that there are the materials for making a special exhibition of etchings a regular event, and we shall be glad to see it become an accomplished fact. But we are inclined to add that we believe the artistic value of such an exhibition, as an addition to the already long list of our annual picture-shows, will be in proportion to the extent in which it represents those qualites of work and of effect which are especially characteristic of etching, and which nothing else can imitate or supply the place of, and avoids such work as is merely engraving in another form.

Redruth.—The restoration of the Wesleyan Chapel, Frock, Cornwall, has been completed, from the designs of Mr. Silvanus Trevail, architect, of Truro. The Messrs. John H. Julian & Sons, of the same town, were the contractors.

THE PROGRESS OF ART INDUSTRIES IN POLAND.

RECENT issues of the *Revue des Arts Décoratifs* have given some interesting notes on the development of decorative arts among the Poles, and we will summarise some of the principal points brought forward in Messrs. Quantin's new and most artistic periodical.

The Poles have always displayed a great love of luxuriousness, not to say somewhat loud, ornamentation. In by-gone days they were the wonder of their neighbours, by reason of the rich colours, the precious jewelry, furs, velvets, and silks they wore in extravagant profusion; while, even in the present prosaic period, they still maintain customs and a dress in keeping with their national taste. In the decoration of houses, as in the decoration of persons, the same tendency has manifested itself. The industrial arts were patronised by the kings, and Sigismund III. was himself a skilful goldsmith. Many museums are still rich with the splendid armour, the artistic furniture, the copper, iron, bronze, and brass works of the past. In ceramic arts alone the Poles had little or nothing to show. In the decoration of buildings they have left many notable traces of their past excellence. Their school of Gothic architecture was very original, and at the cathedral of Cracow, notably among the royal tombs, there is much to study and to admire. In the Austrian, Russian, and German portions of Poland there are the palaces of the ancient aristocracy, which cost as much money to build as would have sufficed to construct an entire town. Nothing in Europe can surpass the castles of Padhorce, of Willanaw, of Krasiczyn, and the marvellous residence at Pulawy, which made Delille exclaim,—"I found Athens on the borders of the Vistula!"

So far back, however, as the seventeenth century, the industry of the country began to deteriorate; the oppression of the middle and the working classes by the nobility, followed by the religious intolerance which imposed pernicious rules relating to building and to public administration, soon brought about a national decadence. The subsequent wars which resulted in the partition of Poland constituted the final blow, and for many years little or nothing was heard of Polish art. We have now, however, undeniable symptoms of a revival. Industry generally has greatly improved throughout Poland, and many and successful efforts have been made to resuscitate those decorative arts for which the country was once so renowned. We need scarcely point out that in Galicia, the best results have been obtained; for this, the Austrian portion of Poland has won back, to a great extent, its national autonomy, and enjoys a comparatively fair meed of freedom. Yet in Austria, art receives but feeble assistance from the State. There does not exist an Art Department, and whatever is done is due to private initiative, supported by purely local bodies. In Galicia, fortunately, Count Wladimir Dzieduszycki has devoted the best part of his life and fortune to the development of industrial arts, and this he has done not only with devotion, but with method and skill.

The first step taken by Count Dzieduszycki was to create, at his own expense, a museum of all the natural and industrial products of Galicia. Then he sought, by protection and acts of generosity, to develop and improve the resources of the country, to train and encourage skilled workmen, so that in time a higher order of work was done. In 1873 he established the industrial museum of Lemberg, and in 1877 organised a grand exhibition of the Galician industrial arts, which proved a striking vindication of the rapid progress that had been accomplished throughout the country. It was in the art of decorating monuments that the greatest progress was displayed. Even the buildings which at Lemberg and at Cracow are but ten years old, present a very different aspect to the more modern structures. Among these may be mentioned the Polytechnic School, the Galician Diet House, the restoration of the Sukiennices, and a number of elegant houses and villas built round Lemberg and Cracow by Messrs. Zachariewicz, Hochberger, Janowski, and others. The ornamental sculpture is for the most part of the French Renaissance style, and many of the houses recall the best villa residences of the Bois de Boulogne.

With respect to furniture and wood-carving the improvement was not so great; but still Messrs. Kohn Brothers, of Cracow, won medals at the International Exhibitions of Vienna and Philadelphia. In cloths, tapestry, and lace-work, and in the magnificent embroideries done by ladies, the Poles have thoroughly re-established their ancient reputation. In gold and silver work, on the other hand, they have but imitated what is done in Paris and Vienna. Enamelled hardware stoves, richly decorated, from the Ceramic School of Kolomee, were much admired at this great national exhibition, and altogether the result obtained in 1877, though in some respects incomplete, must have been highly gratifying to the patriotic Poles, who by these pacific arts contrive to maintain the glory and individuality of their oppressed nationality.

Lemberg and Cracow are the principal centres in Galicia for all intellectual movements; and of late years Lemberg has been more particularly active in spreading on all sides the love of art and art-work. This town is very rich in its museums,—one dating as far back as 1817, when it was founded by Count Ossolinski. It was called the Slavonian Library, and was transferred to the capital in 1826. Originally it was only a collection of manuscripts, but now possesses galleries of paintings, armour, medals, an archæological and a prehistoric section, together with the splendid collection of objects of every description that belonged to the Sobieski family. Caskets of rich Renaissance style, antique furniture, bas-reliefs, modern and ancient statues,—in fact, all that is necessary for the teaching of art in all its forms. Nor are the managers content with the mere collection of these models. Great care is taken to afford facilities of study to all who desire to profit by these advantages; and during the 240 days that the Museum was opened in 1878, there were 1,994 workers who came to study, during that same year, the Museum lent to rural communities 5,484 scientific and artistic works, thus extending its refining influence to the farthest corners of Galicia.

When Galicia recovered her autonomy, the development of industrial arts was so rapid that the Ossolinski Museum no longer sufficed to meet the requirements of the country. Thereupon the town of Lemberg determined to found an industrial museum. A committee composed of the principal architects, engineers, and manufacturers of the town was convoked. Public subscriptions soon supplied the requisite funds; the Council-General of Galicia, the directors of the Charles-Louis railway, and a rich landowner, M. Balulowski, each heading the list with a thousand florins. A number of objects were bought at the Vienna Exhibition of 1873, and with these the Lemberg Museum was opened in 1874. After the Paris Exhibition of 1878 the Lemberg Museum was enlarged, and is now divided into nine sections. The first section consists of the rustic labour of the Galician peasants, and comprises many interesting specimens of wood and wicker work, and arabesques of most original designs and not unlike the ivory work to be found in Hindoo and Himalaya villages. The second section is devoted to fine specimens of furniture; the third to glass; the fourth to the ceramic arts; the fifth to tissues, lace, embroidery, and tapestry, where many pure Polish designs will be found; the sixth to bronze, copper, and iron art-work; the seventh to jewelry; the eighth and ninth to leather and morocco, and book-binding. Schools for design for both men and women are opened at this Museum, where the number of pupils yearly increases.

Apart from this museum, there is at Lemberg the Real School, where pupils from the age of fifteen to eighteen are taught to design in water-colours, patterns, &c., for cloths, furniture, jewelry, metal-work, &c.; while at the Polytechnic School, advanced classes of architecture, industrial and mechanical chemistry, are held. These architectural classes comprise the study of harmony, beauty, and style of composition; of Egyptian and Assyrian ornamentation; of the Greek and ancient Roman styles; of the early Christian school, the Byzantine, Mahomedan, Norman, Gothic, and Renaissance styles. At the same time, the practical phases of architecture are not neglected, and constitute an important part of the course of studies followed at the Lemberg Polytechnical School.

Enough, perhaps, has now been said to show that the Poles of Galicia are thoroughly in earnest and aware of the importance of cultivating in all its branches the wide subject of art applied to industry. In the production of the useful and the beautiful this country may once more hold a prominent position among the most civilised nations of Europe. Those

who have lamented the fall of Poland as a political entity will hail with joy its resuscitation as a leading power in the world of art. Defeated by the overwhelming and brute force of arms, this people may still have a future rich with the triumphs of intellect, taste, and art.

BUILDING SOCIETIES AND THE RESPONSIBILITY OF DIRECTORS.

ALL persons interested in building should be aware of the decision recently given, on appeal, by Lords Justices Bramwell, Baggallay, and Brett, in the case of the Brunswick Permanent Building Society of Manchester. The decision, which may be taken finally to settle the law in a very important matter, is of far wider range than the operations of the society concerned, or of any similar association. It goes to settle the question of responsible guarantee, under which a society on the one hand, and the outer public on the other hand, have relations with the directors of associations. Some doubt has long existed on this score. It is well that this doubt should be cleared up. The Lords Justices have made plain what will henceforth be the law in all similar cases. And although the question is a thorny one, we cannot but think that of two evils the decision avoids the greater.

If we speak of those interested in building societies as forming only a part of the general public interested in the decision, we give some idea of the magnitude of the matter under discussion. According to the Report of the Chief Registrar of Friendly Societies for 1879, which is recently issued, there were, up to December 31st, 1878, 987 building societies established in England and Wales, of which 826 had stated their annual income, and 830 had furnished accounts of liabilities and assets. The aggregate annual income of 826 societies was 15,970,329*l.* The aggregate liabilities of 830 societies were 27,492,442*l.*, of which 17,431,545*l.* were to members, and the balance to creditors. The aggregate assets of these same 830 societies amounted to 28,228,153*l.* These figures show a considerable increase over those for the preceding year, when 672 societies furnished their annual statements.

The transactions of the Brunswick Permanent Building Society reached a figure of about 60,000*l.* per annum. It had power by its statutory rules to borrow money not exceeding two-thirds of the value of the mortgages which it might from time to time accept. In the year 1878 it was discovered that the secretary, who was also treasurer, and seems to have acted pretty much at his own discretion, had borrowed sums actually in excess of the whole value of the mortgages held, and that advertisements for further loans were still regularly published. The directors, on ascertaining this, directed the secretary to discontinue the advertisements; which that officer did not do for some time, and a formal resolution was then passed by the directors ordering the discontinuance. Soon after this, however, further loans were made and receipts were given by the secretary in the usual form. On discovering this, the directors repudiated such loans, and a person who had advanced his money in the ordinary way, after the advertisements had ceased to appear, brought an action both against the society as a corporate body and against the directors as individuals. Lord Coleridge gave judgment against both the society and the directors, holding the society to be responsible for the acts of the directors, and the directors to be responsible for those of the secretary. On appeal from that judgment, the Lords Justices have unanimously decided that the only remedy of the plaintiff lies against the directors individually. They had taken no steps to repudiate the action of the secretary when they discovered its illegality. The plaintiff had advanced his money in good faith, and in ignorance of the want of power legally to borrow. The assets of the society, the judges agree, are not thus made liable, but the directors personally are answerable.

This important decision has a double aspect. On the one hand, as far as the public are concerned, it throws upon every one the onus of taking care of the legality of his own proceedings, including in that word the competence of the party with whom he bargains to make such bargain. There is no doubt, we apprehend, that the security given by the secretary to the plaintiff would have been good as against the society, if the amount borrowed had not been in excess of the statutory powers of the company. The plaintiff would urge, and with some justice, that it was the duty of the secretary to act only within the terms of the legal powers of the company. So, no doubt, it was; but it is now established that it was for the borrower to satisfy himself on this point. Had he seen the books, or in any way become aware of the loans accepted by the company, he would have been aware that the secretary had no power to pledge the assets of the society to him. And the onus of ascertaining that it was really to the society that he was, in accordance with the statutory powers, lending his money is thus thrown upon the plaintiff. No doubt, it is hard on him, but it would have been still harder on the members of the society had the law been otherwise declared.

On the other hand, it is satisfactory to find that the plaintiff was not restricted to making the claim against the secretary personally. The directors are made individually responsible. The justice of this cannot be denied, as they were cognisant of the misconduct of this officer, and had taken no steps to warn the public, or efficiently to stop the practice.

The question still arises,—How if the secretary had so acted, concealing his action from the directors? Suppose he had given the formal receipt of the society, but kept the money for his own use, and not entered it in the cash-book? It is important that this further question should be set at rest. As to the responsibility of the directors, we think that it is a matter of public policy that it should be as comprehensive as possible; but it is even more important that its limits should be known, than that they should be enlarged. The occupation of director is one as to which it is pretty clear that we are likely to have some rather stringent inquiries. There is no mode in which the amateur can so easily earn a large income as by acting as a director. We personally remember a case which occurred in that year of mania, 1845. A gentleman,—and he was a man of honour, though incautious,—who held a high quasi-official position in London, was applied to by so many promoters to act as director on their boards, that he not only kept a private book composed of the prospectuses of the several schemes, but was obliged to index this book, and to refer to the index if he was asked whether he was a director of this or that company.

The men who went in for this kind of thing in times of inflation were called by the not inappropriate name of "guinea-pigs." If a man had the luck to be the son of a duke or a marquis, or to be a baronet, or even a simple knight, the handle of his name was so coveted by promoters that a seat was open to him at every new board. And these seats had two results:—one was, that the public rushed to subscribe to the scheme of which Lord A. B. and Sir C. D. were directors; the other was that the director in question pocketed a guinea as a minimum for each attendance at each board. The noble or knightly men in question,—we could give names were it desirable,—thus went to some outlay in cab-hire. With a good Hansom, kept for the day, a man could manage to attend a considerable number of boards between ten and four, to say nothing of evening sittings. As to business, that, of course, fell into the hands of the wire-pullers. The object of the "guinea-pig" director was to show his face and to sign the attendance-book, and so he earned more fees than a physician in first-rate practice.

This, we trust, is an exceptional case, occurring at an exceptional time. But that large sums,—as large as 5,000*l.* to 10,000*l.* per annum have been lately mentioned by the City editor of a morning paper,—are earned in the profession of director, is stated to be still the case. The point which strikes us as the most serious is that these men can rarely have that education of the expert which alone can justify such large payments. Integrity, no doubt, cannot be overpaid. But the routine of every public body ought to be so exact as to involve no undue reliance on personal integrity. And nothing is likely to exert a more wholesome influence on checking undue directorial authority of this sort than a sharp and certain responsibility. If the hasty and over-occupied director makes a formal appearance at a board, it is well for him to bear in mind that that formality will involve him in a very grave responsibility, if anything goes wrong. It did not escape the notice of Shakspeare how apt were his countrymen to run after the shadow of success. "You see," says Falstaff, "how men of merit are sought after; the undeserver may sleep when the man of action is called on." Sir John Falstaff would, no doubt, have been a director in many companies, had civilisation attained its present development during his lifetime. And leaving out of consideration the "guinea-pig," the over-occupied director, and the director who has but a new and limited acquaintance with the affairs that he directs, form, we fear, rather the rule than the exception. English people have a curious distrust of educated experts. We prefer to take the opinion of twelve casual persons, as to some delicate question of fact, to that of a trained and experienced judge. We put at the head of our Army, of our Navy, of our finances,—of everything but the Law and the Church,—a man innocent of any military, naval, or actuary-like knowledge, and who, as soon as he has to some extent mastered the difficulties of his new position, is unseated for another stranger to the post. While we do this, we are likely to continue the same arrangement for the direction of our public companies. It is of little use to point out the great waste of national resources that is the result of this spirit of suspicion of the technically-educated man. All the more important is it that the director should be aware that the law holds him responsible for vigilance, if it cannot do so for capacity.

DISCOVERY OF PORTRAIT OF DÜRER.

IN the year 1805 the celebrated German poet, Goethe, saw at the house of Hofrath Beireis, in Helmstädt, a youthful portrait of Albrecht Dürer, which had been painted by the artist himself. Of this work the poet gave a full written account. For many years past it had entirely disappeared, but a few days ago it was discovered again at Leipsic. It was amongst a number of old paintings that were to be sold, and which had fortunately been first submitted for examination to Dr. Lücke, the director of the Leipsic Museum. The board containing the painting had been very carelessly treated, and in the seventeenth or eighteenth century another portrait was painted on the reverse side. To the latter the preservation of Dürer's portrait may in all probability be attributed. Dr. Lücke was not slow in discovering that he had before him a long missing work of great value. A piece which had been taken from the top of the painting, with part of the covering of the head, he has had restored, with the date, 1493, and the monogram of Albrecht Dürer, although it is doubtful whether the latter was originally there. In the upper parts the painting has evidently been much restored, but in the portions beneath it is almost intact. The work had passed, after the death of Professor Beireis, into the possession of a family in Westphalia, and in their hands it remained for seventy years. It is now in the keeping of a bookseller, Herr Hermann Hässel, of Leipsic, who has undertaken to look after the painting and to dispose of it by sale. It is hoped that some public institution or gallery will acquire the work, which is of singular value to the art-history of Germany.

Another picture of Dürer's has also been recently discovered at Wiesbaden. It was amongst a number of old paintings left by Herr Veit, an artist who died at Mayence in 1877. It formerly belonged to the Deutsch Herrenhaus at Sachsenhausen, near Frankfort-on-the-Main. This work contains the head of the Saviour wearing the crown of thorns. On his right is the turbaned head of some Jewish celebrity, perhaps the high priest Caiaphas, while on the left is the head of a robber. The painting shows the monogram of Dürer, with the date 1505.

Landscape Gardening.—At the Crystal Palace Company's School of Art, Science, and Literature, a school of gardening and practical floriculture has been established. Principal, Mr. Edward Milner. It will include two divisions,—I. Landscape gardening; II. Practical gardening and floriculture. This school is designed to afford students of the art of landscape-gardening an opportunity, much needed, of entering the profession by systematic mastery of its details, acquired from practical instruction. It is also intended to present similar tuition to gentlemen who are likely to be the owners, the conservators, or the managers of great estates, or who desire to cultivate artistic and natural taste, as a means of enhancing the value as well as the pleasure derived from the possession of land. A further purpose of the directors is to utilise the exceptional capabilities of the Crystal Palace to this end, under the most favourable conditions.

THE BUILDING EXHIBITION AT THE AGRICULTURAL HALL.

THIS, the second annual Building Exhibition, which was opened on Monday last, fully realises the promises of its promoters, and confirms the anticipations expressed by us last week. It shows a very marked improvement on its predecessor of a year ago, both in the variety and excellence of its contents. It includes several novelties connected with building, and a great many things which, though not novelties, are far from being as well known and as largely used as they should be. The exhibition serves to bring together all kinds of materials, appliances, and processes for examination and comparison by architects, builders, and workmen,—by almost all of whom many a useful "wrinkle," many a valuable hint, may be gathered by a careful inspection of the exhibits. One thing that will strike architects and members of the building trade is the exemplification which the exhibition affords of the much greater variety to be found of cheap, though at the same time good, materials and processes, particularly for internal and external decorative work, as contrasted with the resources available within but a very few years ago. The exhibition is one eminently worthy of a visit by the public for whom houses and buildings of all kinds are erected. People may learn to appreciate the work of architects and builders more fully than they commonly do by an examination of the thousand and one materials, details, and appliances that are called into requisition by the constructor; they may also learn to discriminate between good and bad building, and may, besides, get a good deal of instruction on the now popular though to us no new question of sanitation. As we have continually urged, the houses of the people should above all things be healthy habitations, and it is satisfactory to see that sanitary appliances of all kinds are well represented.

When the exhibition opened on Monday many of the exhibitors had far from completed their arrangements, and hundreds of workmen were engaged until late in the afternoon in getting things in order. In time, the stands or stalls of the exhibitors nearly all assumed the shape and appearance which the taste or ingenuity of their owners conceived to be most attractive. From the indication given in the following pages of the contents of the exhibition, our readers will see that they will do well to pay a visit to the Agricultural Hall before the 19th. For convenience' sake, we have classified the exhibits under seven headings or sections, each section again being divided into sub-sections. No such classification as we have partially carried out is attempted in the exhibition, an omission which, in so large a collection of objects, is attended with some inconvenience to the visitor. The catalogue contains a classified index of exhibits, but goods of the same kind are placed in various parts of the building, no doubt to the advantage of the general aspect of the display, though this hardly compensates for the inconvenience we have referred to. We cannot refrain from calling attention to the bad and even dangerous state of a great many parts of the floor of the Hall. The deep ruts and holes in the old and dilapidated planking which forms the surface are far from conducive to the comfort of visitors. The Agricultural Hall Company should look to this, and exhibitors should so lay the gas and water pipes they require as not to trip up the unwary beholder whose eyes are more intent on the goods displayed than on the floor.

I. BUILDING MATERIALS.

Bricks, Tiles, Terra Cotta, &c.—There is a large and varied display of these materials, including those of some new as well as those of several better-known manufacturers. There is evidence of considerable improvement in the manufacture, and particularly in the finishing, of sundry of the exhibits. Messrs. Eastwood & Co. (93, 128), Belvedere-road, Lambeth, show a large assortment of red and white Suffolk facing, diaper, and glazed bricks, together with fire-bricks. They are also strong in red and blue ridge-tiles and finials, as also in terra-cotta chimney-pots, garden-edging, and other ornamental borderings and finishings. The work shows careful moulding and handling. Messrs. Doulton & Co. (114 and 115), of Lambeth, have on view their well-known and deservedly-esteemed "Doulton Ware" in various designs, and applied to as varied uses. They also show tesselated paving-tiles, hearth-tiles, and terra-cotta and art pottery generally in great variety. Particularly worthy of note among the terra-cotta wares shown by this firm are the capitals, Gothic shafts in sections, twisted columns, ornamental key-stones, corbels, panels, and other architectural details. The ornamental fountain in terra-cotta is especially attractive, the figures, birds, and animals which form part of the design being exceedingly well executed. Ashton & Green (Limited), of St. Mary-axe (160, 189), subsidiary to their other exhibits noticed elsewhere, have good specimens of hand-painted tiles, tile-hearths specially designed, fire-bricks, and a fine assortment of tesselated tiles for the floors of halls, churches, corridors, &c. Messrs. Wilcock & Co. (192, 228), of Burmantofts, Leeds, have on view a large and diversified display of white and coloured glazed bricks, terra-cotta, and a variety for ordinary and ornamental building use, embellished with heraldic, armorial, and other devices. This firm also show their patent closet in glazed stoneware, horse, cattle, and other troughs and sinks, together with their Burmantofts faïence, modelled in panels for exterior decoration, and numerous other panels, groups, and floriated designs. The workmanship in general is unexceptionable, though its objects are in a manner legion. Mr. Thomas Lawrence, Bracknell, Berks (232, 287), exhibits red facing pressed bricks, cutters, and some moulded bricks of good make. He has on view a piece of roofing tiled on one side red, the other side being strawberry, while the gable end has a finish of wall tiles. An ornamental trophy in the form of a chimney or column, of considerable altitude, is shown in connexion with this display, illustrative of gauged and carved or moulded brickwork. The latter is worthy of notice. The Countesthorpe Brick and Tile Company (233, 286), Bowling-green, Leicester, show fine red pressed bricks, common and variously coloured, the "Countesthorpe Brick," a variety of tiles, and sundry terra-cotta articles. Special bricks of intense hardness are exhibited by this company, of darker and lighter shades, very regular in form and even in face and finish. Though not of the articles belonging to this section, it may be incidentally stated that a very durable roofing-felt is shown by this firm. Messrs. T. Smith & Co. (291, 318), Canal Potteries, Old Kent-road, in addition to their sanitary ware, have a good display of stoneware and terra-cotta articles, white glazed stoneware, highly-glazed ware, terra-cotta chimney-tops, garden-edging, and sundry other kindred articles for a variety of building and domestic purposes. The damp-proof course and air-bricks are good in manufacture and generally applicable for building uses. Messrs. Joseph Cliff & Sons (293, 316), of Wortley and King's Cross Goods Station, have a stand replete with every variety in bricks, tiles, and terra-cotta productions. Here are to be seen glazed and unglazed, patent, and ornamental, bricks; terra-cotta vases, balustrades, trusses, and terminals; blue Staffordshire bricks and paving tiles. Mr. R. Norris (256, 263), Berkhampstead, displays a large assortment of moulded bricks and tiles, compressed string-courses, copings, terrace balustrades, and fancy and ornamental brick and tile work in general. Mr. J. Matthews (292, 317), Royal Pottery, Weston-super-Mare, presents a form of tile claimed as being superior to others in having a bond like slates. These tiles can certainly be put on with facility, and they are apparently proof against wind-stripping as well as rain-drifting. This "new and improved square-cornered bonding-roll roofing tile," as it is called, is known as "Poole's Patent." This stand contains also several samples of red terra-cotta vases, window-boxes, and armorial tablets. We must not omit to mention the large display of glazed terra-cotta for architectural purposes made by Messrs. Lipscombe, of filter celebrity. Their stand (207, 214) contains a variety of articles in this material (which they term the "Victorian Architectural Decoration"), including a dormer and other details used in their new West-End premises, No. 69, Oxford-street, near the Princess's Theatre. Their display is surmounted by a statue, which, as an inscription informs the beholder, is intended to represent "the grief of Art because of the smoky and dingy appearance of London buildings." Among other various exhibits are (108) Ellison's patent conical air-bricks and ventilators, and Knight's patent terra-cotta air-shaft, with the sanitary ware noticed in another column.

Stone, Marble, Granite, and Artificial Stone.—Mr. S. Trickett (190, 191), Victoria Wharf, Millwall, displays building-stones in great variety, rough, dressed, and polished. Among the granites are several fine specimens of red and grey varieties, in sections of columns and shafts, and in plain and ornamental work. A large variety of the more generally-used free-stones, oolites, and sandstones are also on view, together with pitchings, kerbs, broken granite for macadam, &c. Specimens of walling in different courses or bond are likewise exhibited. This display of building-stones is large, varied, and attractive. Messrs. W. & J. R. Freeman (132, 158), Millbank and Penryn, have an excellent display of granites, unapplied and embodied in workmanship. The granite drinking-fountain is conspicuous in design and execution, through the combination of granite, Dumfries, and other coloured free and sand stones. There are here on view also granite cattle-troughs, basins, and other plain and ornamental articles executed in polished granite, together with marbles and sundry building stones. Messrs. Hodges, Butler, & Dale (294, 315), of Palace-chambers, Westminster, present their "Imperial" stone paving for footways, halls, corridors, kitchens, &c. Specimens and slabs in great variety are displayed, and it is claimed for this artificial stone that on the score of economy, the facility with which it can be laid, and its enduring qualities, it will commend itself to favour and use generally. The material certainly presents a solid appearance and an even surface. It is applicable to a variety of uses, and is here to be seen in the form of doorsteps, risers, treads, landings, gate-stones, caps, copings, and in several other forms. This firm have also on view silicate stone-pipes for air-shafts, cesspools, wells, &c., and specimens of coloured and variegated concretes. Messrs. S. & E. Ransome & Co. (153a), Essex-street, Strand, in addition to a great variety of other objects, exhibit numerous specimens of their patent stone free-grit grindstones, filtering-slabs for tanks, water-works, chemical works, and a quantity of ornamental work in their patent stone, besides gratings, ventilators, slabs for buildings, and a variety of moulded forms for general building and ornamental purposes. This patent stone is extremely hard and close in texture, and to many, at first sight, in colour, surface, and fracture, it presents all the appearances of a natural stone. A patent indurating solution for the protection and preservation of stone, manufactured by this firm, has been successfully used in connexion with many public buildings in the three kingdoms. It is a special form of prepared silicate and calcium, forming a cement after its application, and on entering the pores of the stone. The Tamar Kit Hill Company (349B) exhibit several good specimens of hard and close grained granite of bright colour, rough hewn, squared, and polished. The objects include cubes, pitchings, flattened edge kerbs, and finished blocks.

Limes and Cements.—The Somerset Lime and Cement Company (53, 76), Queen Victoria-street, exhibit some good limes, including blue lias, hydraulic, and lump lime, with selenitic cement. There are also on view several concrete articles, manufactured with this blue lias and cement. Messrs. Eastwood & Co., of Lambeth, are exhibitors of some good Portland cement. Exhibitors of limes and cements in the state indicated here are few in number, or were not to the front on the occasion of our visit. These remarks are also applicable in relation to some other exhibits which we have been unable to notice.

Iron.—No building exhibition in this age of iron would be complete without some representation of iron as applied by the architect. Messrs. Rownson, Drew, & Co. (209, 212), of Upper Thames-street, show some very good specimen sections of girders and joists. Mr. Archibald D. Dawnay has also a display showing ironwork as applied in the construction of fire-proof floors. Mr. J. C. Humphreys, of Knightsbridge, exhibits some galvanised corrugated iron houses and fences (335), and Messrs. Treggon & Co. (168, 183) exhibit corrugated iron in sheets.

Glass.—Messrs. John Hall & Son (199, 221), of London and Bristol, have an interesting display of almost every conceivable description of glass for building and other purposes, plain, coloured, silvered, and rough. Specimens of glass embossed by the "Sand Blast" process are exhibited in the upper portion of Mr. Sage's erection in the centre of the Hall.

II. CONCRETE BUILDING.

Monolithic Systems, Slabs, Blocks, and Apparatus.—Mr. W. H. Lascelles (370), Bunhill-row, is unsurpassed by any exhibitor in this section, and in some directions he is not at all approached. If any one doubts what concrete is capable of being moulded into, and the weight it is able to sustain, he need only carefully examine what is here shown to be convinced that properly-made concrete will admit of still further application without failing or becoming discredited as a valuable building material. Here on view are two or three forms of windows, with moulded jambs, deeply splayed cills and transoms, characteristic of the domestic architecture of the Elizabethan period, and of later days. Walling with concrete slabs and in solid blocks is shown here also, grey and red, and procurable in other colours if desired. Particularly worthy of note as a novelty is a length of clustered column, the external shafts being of red-coloured concrete, presenting the appearance of the ordinary red building stone. Chimney-pieces in variety of styles, including, of course, Jacobean and Queen Anne, are in view, together with copings, tiles, balustrades, fire-proof doors, string-courses, finials, panels, and sundry other forms and figures in concrete. This stand should be visited by all interested in concrete material and construction. Some of the items we have mentioned were designed by Messrs. Norman Shaw, A. W. Blomfield, Ewan Christian, and other architects of repute, for works which have been, or are in course of being, carried out by the exhibitor. Messrs. C. Drake & Co. (296, 313), Railway Works, Battersea Park, had little in position on the day of our visit, but were preparing for a good display. Their patent complete iron concrete building apparatus was fixed. It is well suited for its intended purpose. Among the other exhibits by this firm are patent dovetailed self-fixing concrete slabs for building monolithic concrete walls with finished faces, obviating plastering, "Mosaic Stone," "Mosaic Marble," and "Mosaic Granite Slabs," for panels for half-timber construction, chimney-pieces, fireproof doors, and other kindred articles. Messrs. F. W. Reynolds, as an adjunct to their wood-working machinery, show Mr. Thomas Potter's (246) monolithic concrete-building apparatus, and Potter's dovetailed fancy slabs, requiring no appliances in construction. These walls are hollow within, save for blocking at intervals, and are faced with slabs about ½ in. in thickness. There is also a specimen of walling with a brick facing and a filling of concrete within. The work in both instances presents a good appearance, and the latter possesses considerable strength. Mr. J. Tall, of Dulwich (165, 184), shows portions of concrete cottages nearly two stories in height, specially designed to meet the needs of the working-classes. The door and window dressings, string-courses, and other marginal work, are finished in fine Portland cement concrete, and the panellings in rough cast. The latter are varied in the present instance by different coloured finishings. The chimney-breasts within evidence skill in providing for the flues, and in presenting a good face with characteristic channelling to give the work a finished, not to say ornamental, appearance. A patent roof is also shown displaying a mode of ornamentation and dispensing with lath and plaster. Indestructible door and window frames are of course claimed as advantages in these and like instances of concrete building. Mr. Alfred Walker (371), Leeds, shows good specimens of concrete slabs for carriage drives, yards, and street pavements, chequered and channelled, with other pavements varying in thickness from 3 in. to 6 in., together with entrance-steps to hall doors, treads, risers, nosings, &c. The Wouldham Cement Company (352) display plain and ornamental concrete work in slabs, keystones, copings, cornices, sinks, and other objects made with cement of their own manufacture. The Eureka Concrete Company (290, 319), Queen Victoria-street, have a fair display of steps, window-sills, corbels, brackets, fire-proof flooring, large slabs for railway platforms, cornices, and other work, all of concrete material. Some ornamental figures and patterns are also shown. The exhibits are of good material, and generally good in execution. The patent concrete-mixer shown by Messrs. F. W. Reynolds & Co. (350), is noticed under the heading "Builders' Machinery and Plant."

III. BUILDERS' MACHINERY AND PLANT.

There are several excellent exhibits in this section, and, among the wood-working machines, some characterised by new features and applications. Indeed, improvements move apace in the design and construction of machines used in the conversion of wood into the various forms involved in carpentry and joinery. Messrs. F. W. Reynolds & Co. (349 and 350), Acorn Works, Blackfriars-road, show a number of capital machines for planing, moulding, mortising, and tenoning. For the latter operation they have introduced a specialty for the first time, called Cory's Patent Tenoning Apparatus, in which a tenon-cutting attachment is combined with a mortising-machine. Indeed, the mortising-machine, by simple adjustment, is still capable of further application, and already this firm have shown how composite in character a mortise-machine may become in connexion with drilling, boring, cutting, driving, sawing, and other operations of wood conversion. The panel planing-machine, self-feeding, planes up to 1 ft. 6 in. wide, and to 5 in. in thickness. The "Contractor's Bench" shows improved pulleys, rising and falling spindles, and a 30-in. saw. There are vertical spindles also for circular and plain moulding. The machine is driven by Messrs. Reynolds's portable engine, with patent feed-water heater and steam-blast. The Patent Concrete Mixer of this firm is a very strong and well-made machine, and it is adapted to either hand or steam power. It is provided with rotary-cylinder and adjustable outlet, can be tilted or tipped to any desired angle, and is mounted on travelling wheels, with locking-gear and shafting complete. The machines of this firm which we witnessed in motion performed their work with great expedition and accuracy. Messrs. Charles Powis & Co. (366), Gracechurch-street, have on view a number of improved circular-band sawing and boring machines, including the new combined circular and band saw for hand and steam power. An improved "Estate Joiner," and a new joiner, the "Universal," are also exhibited. They perform the sundry processes of planing, moulding, mortising, grooving, boring, tenoning, &c., and are compact in form, and strong and even in motion. In addition, the firm shows an improved four-horse power vertical engine and boiler. Messrs. Thomas Middleton & Co., Engineers, Southwark, exhibit in motion (367) Shill's Patent Wood Planing Machine for hand and steam power. This machine will plane two or four sides of the scantling of wood, hard or soft, at the same time. The machine is particularly applicable to hard woods. The plane or cutting-tool can be adjusted to any angle or line of obliquity to suit the nature of the material. It will plane from 1 in. wide up to 11 in. wide, and no matter how feathered, gnarled, or knotty the wood operated upon may be, the shaving will be taken off with uniformity, and the surface of the wood left quite even and clean. These machines are made to different sizes, but all are applicable by the adjustment of the cutting tool to plane hard or soft woods. As an adjunct to this stand, brick-cutting and press-brick machines are shown, —"Murray's Patent." These machines are well constructed, and, as far as our examination extended, they appear to be suitable for their intended uses. The Co-operative Machine Company (364), St. Mary Axe, exhibit circular-saw benches of different sizes and adjustment. One is made to take a 48-in. saw, with self-acting drag motion and outside bracket support, also with third bearing and side-presses to fence. Band-saw machines, patent tenoning, rabbeting, and grooving machines, are here, too, the latter with rising and falling spindle, and with band-saw combined. A 6-ft. wrought iron joiners' bench-cramp, of good make, is among the other exhibits on this stand. Messrs. Smith & Co. (360), Ashburnham-road, Chelsea, show mortising machines, saw-benches, saw-sharpening machines, and other wood-converters. The saw-bench of this firm has one or two new features in connexion with the spindle of the machines; one is intended to give protection from injury to the workman, and the other consists in an adjustment for lubrication. The machines are driven by a 2-horse power "Otto Gas-engine," exhibited by Messrs. Crossley Brothers. Of the great merits of these motors, we have frequently spoken. Mr. G. S. Hindley (297, 312), Bourton, Dorset, exhibits vertical steam-engines and boilers of various sizes and powers. Among others we noticed a horizontal engine of 8-horse power, combined with a 10-horse power vertical boiler, a self-acting saw-bench with variable feed apparatus, and a circular saw-bench and band-saw combined. A plain saw-bench is also on view, fitted with Taylor's Patent Automatic Safety Saw-shield. All the exhibits here shown are good in casting and finish. Messrs. Pontifex & Wood (19) of Shoe-lane, in addition to their exhibits mentioned under other headings, show some good specimens of boilers and engines, including a 4-horse boiler and 12-horse horizontal engine, with expansion gear. These boilers and engines are characterised by great compactness, strength, and fitness for their intended uses. Messrs. Vernon & Ewens, Central Works, Cheltenham (169, 182), show a combined 2-horse power vertical engine and boiler, which, in compactness of arrangement and adjustment, is noticeable. This combined engine and boiler is mounted on a cast-iron ash-pan and feed-water tank. There is a reversing motion, efficient feed-water heater, improved valve-box for making feed-pump continuous-acting, and an improved high-speed governor. These engines are made of various sizes, from two to twelve horse power. The boiler in connexion is "Smith's Patent Tubular." This firm display also castings of improved apparatus for ventilating in respect to drains and sewers. Mr. C. D. Monninger (95), Clerkenwell, displays an assortment of hand-saws, knives, circular-saws, of various sizes, saw-sharpening machines, band-saws, files, and building plant and fittings generally. Messrs. Salmon, Barnes, & Co., of Ulverston (170), in addition to exhibits mentioned under another section, show their joiners' patent bench-knife, a very useful and efficient tool for cabinet-makers, joiners, and wood-workers generally. When applied by the workman it holds the stuff or scantling of wood securely upon the bench, and can be attached and released with the greatest facility and ease. The action is by a small lever which presses the knife against the material, and unlike the old form of bench-knife, it does no damage to the wood operated upon, or the bench itself. Messrs. Waygood & Co. (300, 309) are exhibitors of crabs, cranes, and jibs. Builders' carts of strong construction are shown by Mr. W. Wakeford, Great Chesterford, Essex (361), Messrs. W. & T. Robson & Co. (358), and by Messrs. Inwood & Rawlins (348).

IV. JOINERY AND WOODWORK.

Doors, Sashes, and General Joinery.—There are several good specimens of joinery, in the shape of doors, sashes, trimmings, mouldings, &c., but arrangements on the part of London exhibitors were not sufficiently forward at the time of our visit on Monday, so we are obliged to be brief in some directions. Messrs. Esdaile & Co. (195, 225), Wenlock-basin, City-road, display a good assortment of doors and mouldings of English, American, and Swedish manufacture; sashes, architraves, cornice mouldings, trellis work, plasterers' laths, &c. The workmanship of the doors, sashes, and mouldings, whether in red or yellow deal or pine, and in both home and foreign joinery, shows cleanness and evenness in execution. Messrs. Atkinson & Co. (323), Wharf-road, were not forward in their arrangements on the day of our visit. They intended to have on view at the opening of the exhibition a Swedish wooden house complete, but it was not to be seen at Islington on Monday, despite the fact that in a paragraph in a daily paper for Saturday last the readers of that journal were told,—we suppose by one of the many reporters who are prone to put implicit faith in catalogues and other printed documents, without absolutely seeing or hearing the things or speeches they refer to,—that if they would visit Islington they would see the structure in question. It seems that the vessel by which it was expected had not arrived. Messrs. Atkinson's other exhibits include specimens of doors, mouldings, window-frames, trellis work, &c., turned out and selected with their usual care. Messrs. Vernon & Ewens (169, 182), Central Works, Cheltenham, in addition to their engines and boilers, show some very good specimens of joinery work in doors and mouldings. A pitch-pine door, with raised panels above, and flush ones below, and with stiles and rails showing

stop-chamfer work, is worthy of particular note for cleanness of finish. This joinery work, on the whole, evidences the good workman. Some other exhibitors of joinery work were not sufficiently forward in their arrangements for us to notice their goods. Messrs. Forbes, Son, & Co. (355), exhibit Hayes's patent contrivance for removing window-sashes for cleaning or repairing. The invention, which should be looked at, consists in providing a movable metallic pocket in which one side of the lower sash slides, and which pocket can be, by means of a key, immediately shifted bodily away from the sash. It is claimed for the invention that it can be applied to old sashes. Messrs. Connor & Co. (257) exhibit some good and interesting specimens of green wood, and specimens of the same treated by Blyth's carbolising process. We have mentioned the exhibits of parquetry and other ornamental woodwork under other headings.

Shop Fronts, Fittings, and Show Cases.—Mr. Frederick Sage, of Gray's-inn-road, is conspicuous both in the position of his attractive stand in the centre of the Hall (153) and the varied character of his exhibits. The doors and their trimmings in hard-wood joinery, and varied in panel-work and moulding, are characterised by excellence in finish. The shop furniture and fittings generally could scarcely be better finished. Some very fine show-cases are on view, large and small ones alike showing skilled execution. A length of mahogany counter is especially worthy of notice, as it supplies a crying need by the provision of a seat for female shop assistants. The seat in question is compact, revolving on a pivot, and passes under the counter out of the way when not required. Detailed descriptions would be necessary for doing justice to Mr. Sage's show cases and shop furniture and fittings generally. We commend the stand to the attention of all visitors, professional and commercial. Mr. Lascelles, in addition to his other exhibits already noticed, shows some joinery work in chimney-pieces and dado framing, &c., in old domestic style. Messrs. Ihlee & Horne (142, 149), Aldermanbury, exhibit a rustic cottage, the sides and roof of which are covered with Lascelles's concrete wall tile-slabs. In this cottage dark *séances* are held at intervals for showing the capabilities of Balmain's luminous paint, and it forms an adjunct to the stand of Messrs. E. S. Ransome, whose exhibits are numerous in another section.

V. SANITARY APPLIANCES AND FITTINGS.

In this department of the exhibition there is as we have already observed, a good display.

Warming and Ventilation.—Messrs. Doulton & Co. (114, 115) show the "Lambeth Radiating Tile Stove," the merits of which are great effectiveness obtained with the use of a small quantity of fuel and a minimum of attention. They are also cleanly and agreeable in appearance, and on all these grounds they are likely to be very largely used. Messrs. Boyle & Son, of Glasgow and Holborn Viaduct (166), exhibit their well-known and largely-used patent self-acting "air-pump" ventilators, which, it may be observed, are without any movable working-parts, and act by the production of a vacuum caused by the passage of the external air through the head or top. The same firm also show their patent chimney cowl for preventing down-draught, and vertical inlet tubes for ventilating purposes. The method adopted by Messrs. Boyle in applying their system of ventilation to buildings is well illustrated by a large diagram. Messrs. Treggon & Co., of Jewin-street (168, 183), show their patent "Counterblast" cowl, in zinc and galvanised iron. This should be looked at, as it professes to entirely prevent down-draughts, and to create a strong upward suction. The same firm are also exhibitors of iron and zinc cowls, chimney-tops, and tallboys, in great variety. Another of their exhibits is Gillingham's patent radiating heat generator, for use in conservatories, shops, and other positions. Mr. James Howorth (349A) is an exhibitor of his well-known revolving Archimedean screw ventilators, the merits of which are well known. Amongst other ventilators exhibited we may mention Kite's (45), Papier's "Zenith Air or Steam Screw Ventilator" (372), and the "Climax" (351). Messrs. Brown & Green, of Bishopsgate-street and Luton (374), show their double-action warm-air ventilating-stoves, very effective for warming churches and public buildings. They also show the registered "Albion" slow-combustion stove, and their "Slow Combustion Patent Ventilating Stove," which is simple in construction, and, we should say, economical of fuel. Mr. J. G. Wagstaff, of the Alma Ironworks, Dukinfield (365), exhibits his improved patent "Upright Tubular Saddle Boiler," for hot-water apparatus, and for which he claims economy, efficiency, and durability. Messrs. Steel & Garland, of Sheffield and Holborn-viaduct (97, 124), have a good display of slow-combustion and other grates, most of them designed to suit the prevailing "Queen Anne" taste. They also exhibit their improved "Wharncliffe" patent warm-air and open fire register-grate, which should be examined by those who have not yet seen it. The exhibitors claim for it, and apparently on good grounds, economy combined with efficiency. The stoves of this firm, it may be mentioned, are exhibited in conjunction with some good chimney-pieces in wood, shown by Messrs. W. Walker & Sons, of Bunhill-row. Another grate also well worthy of attention is one which is the subject of a recent patent, viz., Parker's patent "Kyrle" grate, manufactured by the Coalbrookdale Company, and exhibited by Mr. W. Addis, of Leicester-street, Leicester-square (337). This grate is specially devised to burn anthracite coal and other smokeless fuels difficult of combustion in ordinary fireplaces. It is shown in action, and the inventor appears to have succeeded in effecting his object. Mr. Addis also exhibits at his other stall Cundy's patent warm-air stoves, and a number of grates and stoves of the Coalbrookdale Company's manufacture, including the "Control Combustion Grate," and slow combustion and other grates with "adaptor" splays hinged so as to allow the grates to fit various sized openings by canting the splays at different angles. Messrs. Ashton & Green (160, 189) are exhibitors of a variety of slow combustion and other grates. Mr. H. Hunt (9, 30) shows the "Crown Jewel" American base-burner anthracite coal stove, with talc globular lantern through which the fire is seen.

Water-closets.—Mr. D. T. Bostel (14) shows his improved "Brighton Excelsior" wash-out closet, now so well known as not to need description. Messrs. Pontifex & Wood (19), of Shoe-lane, are exhibitors of a variety of valve-closets of good construction, fitted with water-supply regulators and waste-preventers. They also exhibit a number of improved pan-closets, but water-closets of this description, as has often been pointed out by us, are far from being desirable for use in all situations, owing to the fact that the iron "containers" which form part of their construction are retentive of foul matter. Messrs. Doulton & Co., of Lambeth (114 and 115), show some very good closets, including the "Lambeth Improved Flush-out," in white ware and stoneware, and the "Lambeth Valve Closet." These are provided with stoneware traps. The Lambeth trapless "closet" should also be looked at by visitors. All these closets are provided with Doulton's patent regulating supply-valve, and with Doulton ware sunk-dish handles. The Antiseptic Apparatus Manufacturing Company, Harrow-road, exhibit (334) a simple deodorising apparatus, capable of being immediately attached to pan and other closets. By the attachment of the apparatus to an ordinary pan-closet or valve closet, a small quantity of an odourless deodorising fluid is ejected into the basin simultaneously with the entry of the clean water from the cistern. The vessel containing the fluid is placed beneath the seat, and contains about 1,800 charges. It is to be seen in action, and is well worth the attention of visitors. Messrs. W. Smeaton & Sons, of Moorgate-street and Howland-street (343) show their patent "Eddystone" closet, which is one of the simplest and best of its kind in the market. Messrs. John Bolding & Sons, of South Molton-street (346), are exhibitors of some very good valve-closets, including the "Simplex," with self-trapping overflow. Messrs. Capper, Son, & Co., also exhibit (12, 27) Pearson's patent "twin-basin" closet. At Stand 99, Mr. Banner exhibits a new and improved form of pan-closet, which is worthy of attention; also full-sized working models of his system of sanitation.

Baths, Lavatories, Urinals, &c.—Messrs. Doulton & Co. (114) are exhibitors of treadle-motion and other urinals with straight down-pipes in white glazed ware. They also show some good lavatories, some of them with shampooing apparatus; a stoneware bath, lined with white enamel; and housemaids' sinks of convenient and improved construction. Messrs. Ashton & Green (160, 189) exhibit enamelled iron baths, and Messrs. Treggon & Co. (168, 183) baths in galvanised iron and zinc, enamelled inside. Messrs. W. Smeaton & Sons (343) have a notable display of baths and lavatories, singly and in combination, including a handsome bath-room, completely fitted up in rich Spanish mahogany. Urinals and other sanitary fittings are also shown by this well-known firm. Messrs. Bolding & Sons (346) are also exhibitors of baths and bath apparatus. Among other exhibitors of baths, &c., are the Birmingham Sanitary Association (177), and Messrs. Wells & Co., of Shoreditch (321, 322).

Water Fittings.—Messrs. Pontifex & Wood (19, 20) exhibit water-waste preventers approved by the New River, Grand Junction, and other water companies, together with a great variety of screw-down and other valves and cocks and plumbers' brasswork generally. Messrs. Doulton & Co. (114, 115) exhibit their patent water-waste preventers, and a variety of "anti-percussion" lavatory and other valves and cocks for high and low pressures. To meet the requirements of water companies, Messrs. Doulton have contrived and here exhibit a water-waste preventing apparatus for baths, by the use of which it is impossible for the cold supply and the waste to be open at the same time. The apparatus consists of a simple interlocking arrangement, whereby the act of opening the waste locks the supply, which cannot be opened until the waste is closed. This firm also show an aërating water filter invented by Mr. Bailey Denton. Messrs. Treggon & Co. (168, 183) show an ingenious hydrometer for indicating the level of water in cisterns and tanks. It is pneumatic in principle. Messrs. D. Hulett & Co., of High Holborn, are exhibitors (174) of plumbers' brasswork, comprising screw-down and other cocks, gun-metal valves for steam or hot water, and other fittings. Messrs. Smeaton & Sons (343) show a cam-action water-cock, and a variety of fittings for baths, lavatories, sinks, &c. An interesting item of Messrs. Smeaton's exhibits is a very ingenious "wash and spit basin" for the use of dentists and their unhappy patients. Messrs. Quirk, Barton, & Co., of Gracechurch-street and Rotherhithe, have a stand (359) displaying specimens of their patent tin-lined lead-piping and tin-lined sheet lead for the prevention of lead-poisoned water. These materials will be found of especial service where the water is soft. They are also used by publicans, distillers, &c. Messrs. Braithwaite & Co., of Leeds (102), show a patent syphon water-waste preventer cistern for water-closet supply; it is simple in construction. Messrs. Purnell & Sons, of Westminster (353), show a somewhat similar apparatus.

Drain-pipes, Traps, &c.—The Countesthorpe Brick and Tile Company, Leicester (233, 286), are exhibitors of some very good stoneware vitrified drain-pipes. Messrs. Thomas Smith & Co., of Old Kent-road (291, 318), include amongst their sanitary stoneware specimens of Herbert J. Jones's patent drain-pipes, which are specially suitable for the sewerage of new roads on estates where building has not commenced. Movable saddle-pieces are put in in the first instance, and these are replaced by junction-caps when the house connexions have to be made. The goods shown by this firm include syphon, disconnecting, and other stoneware traps, also stoneware street gullies and carriers for sewage farms. Messrs. Joseph Cliff & Sons, of Wortley Potteries, near Leeds (293, 316), are exhibitors of very good sanitary stoneware, including Potts's patent "Edinburgh" air-chambered sewer trap for disconnecting house-drains from sewers. Messrs. Hodges, Butler, & Dale (294, 315), of East Greenwich, show their silicate stone socket-pipes for drainage purposes; and Messrs. Smeaton & Sons (343) their favourably-known cast-lead "Eclipse" traps. In connexion with these details of drainage appliances we may mention the exhibits of Messrs. G. Waller & Co. (101), of Holland-street, Southwark, who show ventilating doors and manholes for sewers; flushing-boxes, gates, and valves; inspection-boxes; and a collection of tools used in the cleansing of sewers.

VI. DECORATIVE ART AND MATERIALS.

Wall, Ceiling, and Floor Decorations.—The Papyrotile Company, Holborn Viaduct (144), exhibit their effective decoration made and applied in tile fashion for the adornment of the walls of apartments. It should be seen by the visitors, as also should the Linerusta-Walton decoration for walls and ceilings. It will be better known to some of our readers by its

old name of "Linoleum Muralis," and is exhibited in great variety of design (including, of course, Adam and Queen Anne) for walls, friezes, and dadoes for churches, halls, rooms, and staircases. Messrs. Bollmann & Ivey (238, 281) are the most prominent exhibitors of Scagliola for walls and columns. They show a specimen of a dado they are executing for the Hastings Municipal Buildings, consisting of Red Devonshire, with Serpentine capping. They also exhibit specimens of the columns they executed for Carpenters' Hall, London-wall, and of a dado for the Carlton Club; and display, besides, a number of smaller specimens of this well-known and effective decoration. We are informed that the Cape Government have specified this firm to supply the Scagliola work required for the new Parliament House at the Cape. Messrs. Doulton & Co. (114) are also exhibitors of glazed terra-cotta and stoneware for architectural purposes. Messrs. Joseph Cliff & Sons (293, 316), of Wortley, are exhibitors of some panels and pilasters of majolica-glazed terra-cotta for internal, and salt-glazed stoneware for external, decorative purposes. It is in various designs and colours, and is partially modelled by hand before firing. Messrs. J. E. Eberhard & Co., of Edward-street, Hampstead-road, exhibit very good specimens of parquet wall and floor decoration, including their patent composition-glue for fixing parquet work on stone, concrete, asphalte, or any similar surface. A very good carved oak dado and chimney-piece are also shown by this firm. Messrs. Smeaton & Sons (343), and Mr. Henry Bassant (147), are also exhibitors of parquet flooring. Messrs. Burke & Co., of Newman-street, exhibit (143, 148) specimens of their well-known and appreciated marble mosaic work for floors and walls. This needs no commendation. Messrs. Burke are also exhibitors of a material which they term marble mosaic concrete, and in which good effects are got by the use of very small pieces of coloured marbles. In conjunction with Dr. Salviati, the same firm are exhibitors of Venetian glass mosaic for wall decoration. Messrs. Jackson & Graham (111, 118), of Oxford-street, make a good display of ceiling and cornice enrichments in fibrous-plaster, a material capable of very effective treatment, and obviating delay in waiting for plaster-work to dry before proceeding with decorations. The designs are in a variety of styles, including that of the Brothers Adam. Messrs. Whitcombe & Emson (237, 282) are exhibitors of Hitchins's patent plastering, which claims to be fireproof. Upon the slabs of this material, when *in situ*, cornices and enrichments may be fixed as upon ordinary floating. Messrs. Jeffrey & Co. (181) exhibit a number of wall-papers with dadoes and friezes. On the central screen is shown the "Briar Rose" decoration, designed for the firm by Mr. Walter Crane. Messrs. J. & H. Patteson are exhibitors (234, 285), among many other firms, of marble-mosaic tiles for floor and wall decoration. Mr. George Mitchell (173), of Brompton-road and Upper Thames-street, exhibits some well-executed scagliola, and a fine shaft in Red Devonshire marble, one of a series in hand for the new City of London School on the Thames Embankment. Mr. Mitchell also sends a handsome chimney-piece; indeed, his stall as a whole, is one of the best in the hall. Messrs. H. Rees & Co., of Lambeth (197), exhibit metal tiles for wall decoration. We must not omit to mention the enamelled slate dado to be seen in Messrs. Ashton & Green's collection of goods. It is capable of being supplied in any design, in slabs 10 ft. long, thereby reducing joints to a minimum.

Ornamental Metal-work.—Messrs. Treggon & Co. (168, 183) exhibit in a striking manner the applicability of zinc as a medium of architectural decoration. This is seen in a sample of the zinc "apron-piece" affixed to the tower of the gateway of the Midland Hotel, St. Pancras, a piece of work which includes a very bold floral scroll ornament designed by the late Sir Gilbert Scott. Messrs. Hodkinson & Clarke (136) of Canada Works, Small Heath, Birmingham, are exhibitors of several ornamental wrought-iron grilles for windows, executed in various styles. Messrs. Jones & Willis (163, 186) are exhibitors of wrought-iron and brass work in lamps and chandeliers, as are Messrs. D. Hulett & Co. (174), of Holborn, and Messrs. Wells & Co. (321), of Shoreditch. The latter firm, while showing much that is good in other directions, exhibit some cast-iron grilles, literally copied, rivet-heads and all, from wrought-iron work. The specimens to which we refer are noteworthy examples of what to avoid. If ever purchased and fixed they will very easily lose some of their much-projecting branches. Before passing from the subject of ornamental metal-work, we may call attention, not for the first time, however, to the artistic as well as industrial capabilities of Spence's Metal, exhibited by Messrs. J. Berger Spence & Co. (194, 226). Its chief industrial use at present is in its application, instead of lead, for the jointing of iron gas and water mains, but it is also available with great effectiveness for artistic purposes, as the bust of Mr. Ruskin which is shown testifies. More may be done with this material than has yet been effected.

Paints, Enamels, Varnishes, &c.—Messrs. Pontifex & Wood, of Shoe-lane (19, 20), are exhibitors of a great variety of white-lead, oils, varnishes, colours, wood-stains, and other preparations used by painters and decorators. The Silicate Paint Company (151) are exhibitors of their well-known non-poisonous manufactures, including Charlton White (a substitute for white-lead), and silicate and enamel paints. They also exhibit specimens of "Duresco," a new anti-damp and washable distemper. In the specimens shown the surface is ornamented in stencil work, but the material would of course be principally used in plain colours. Mr. H. C. Stephens (235, 284), of Aldersgate-street, exhibits his well-known and now long-tried stains for wood, and some good specimens of the decorative effect that can be got by their use. The Indestructible Paint Company (180), Cannon-street, are exhibitors of their paints, enamels, and solutions, which have been largely used, and, we believe, with good results. Messrs. Randall Brothers, of Lime-street, exhibit their sanitary paints, powdered dryers, and other useful preparations. Messrs. T. Wilson & Co., of Stowmarket (201), are exhibitors of their alkaline composition for removing old paint.

VII. MISCELLANEOUS.

Locks and Ironmongery.—Messrs. Chubb & Son (2, 37), Queen Victoria-street, E.C., have a good assortment of safes and locks, and some with new features. Their selection includes the best varieties of their manufacture, plain and highly polished. The safes are of all sizes, from small jewel safes to others weighing several tons, and mounted on carriages. It would need detailed descriptions to give even a summary of the chief features of several of their office and banking-house fire and burglar-proof safes. A specialty in the present exhibition is the "Duplex Chronometer Lock," made for bankers' special security. It can be set to open or close at any desired hour, and will not close unless both chronometer movements are in perfect working order. But, on the other hand, it will open should only one movement be in action. The lock contains a duplex electrical mechanism with which is synchronised another movement fixed outside the door. These are connected by a fine wire, and can at once be brought into action, should both chronometers have failed in their duty. In addition it may be stated that this lock is the only one of its class provided with means of opening in the event of the chronometer stopping. The ordinary door, desk, drawer, and various other locks shown by this firm are all characterised by skilful execution and fineness in finish in all their parts. Messrs. Hobbs, Hart, & Co. (312A), Cheapside, exhibit a good selection of highly-finished locks and massive fire and thief resisting safes. There is on view the very notable bullion-vault door as manufactured for the Treasury and the Bank of England. This door is architectural in character externally, and the wrought-iron work is characterised by good finish. It is needless to add that on the score of strength nothing more could be desired. Strength and massiveness are here accompanied by suitable ornamentation. The locks shown by this firm include all varieties. Together with massive iron doors for strong-rooms, are shown party-wall doors for the prevention of fire in large buildings, casement bolts, and other adjustments and fixings. Mr. James Hill (96, 125), of Upper Thames-street, has a large display of locks, door-handles, sash-fasteners, knobs, bell-pulls, finger-plates and door and sash brass and enamelled furniture in general. The display, indeed, includes every description of builders' and cabinet-makers' ironmongery. A specialty is shown under the name of the "Blind (Window) Guard Fastener," a simple and withal an effective appliance, fully effecting its purpose in action. This display of iron and brass fittings and fastenings will repay an examination. Messrs. Rownson, Drew, & Co. (209, 212), Upper Thames-street, are also strong in locks, ironmongery, brass fittings and fastenings, plain and highly ornamented. Their contractors' plant includes screw-jacks and other kindred appliances used in contractors' and builders' work generally. Some of the locks of this firm show new features, and they merit attention.

Anti-Corrodo Iron, in the shape of tubes, fittings and castings of all kinds, treated by Professor Barff's valuable preservative process, are shown by Messrs. J. E. & S. Spencer (100), of Queen-street-place, who are also exhibitors of enamelled and galvanised iron goods in great variety.

Methods of Glazing.—In illustration of the now numerous systems of glazing without putty, different methods are exhibited by the following firms, viz.,—Messrs. Rosser & Russell (303, 306), Charing-cross; Messrs. Tracey & Son (15, 24), Ilford, Essex; and Mr. C. Causley (295, 314), Down Park-road, West Hackney. Messrs. Tracey exhibit their method under a shower of water laid on from the top, and the work stands the test thoroughly. The methods of glazing shown by these firms are exhibited as applied to horticultural constructions generally, which will be found to be pretty fully represented in the exhibition.

Chimney-pieces.—Mr. William Addis, of Leicester-street, Leicester-square (98, 123), exhibits, besides the grates already mentioned, chimney-pieces in the Adam and other styles, cast in iron by the Coalbrookdale Company. Messrs. Burke & Co., of Newman-street, show (143, 148) two exquisite chimney-pieces in statuary marble, and one in Algerian onyx. Messrs. Ashton & Green (160, 189), have a large display of chimney-pieces, including some costly ones in statuary and other marbles, such as Brocatella and Italian Griotte. This firm has also a large and notable show of chimney-pieces in enamelled slate. In connexion with these chimney-pieces the firm show fenders and hearth-tiles, the latter made at their own works in Staffordshire. Mr. George Mitchell (173) shows a number of marble chimney-pieces, including a very good one, already mentioned, in carved statuary marble. The chimney-pieces in concrete, exhibited by Mr. W. H. Lascelles (370), were mentioned by us when we were treating of that material, but he also shows one in Bass wood. Messrs. Wells & Co. (321) are exhibitors of a variety of marble and other chimney-pieces, and Messrs. Gee & Co., of Gloucester (45, 86), show a variety in marble and enamelled slate.

Gas-fittings and Stoves.—Messrs. Jones & Willis (163, 186) are exhibitors of wrought-iron and brass gas-fittings in the Gothic and Queen Anne styles; so also are Messrs. D. Hulett & Co., of High Holborn (174) who make a very good display of chandeliers, brackets, lanterns, and library and other lights. This firm have also a good display of gas-stoves, from the small ring burners, capable only of boiling a kettle or cooking an omelette, to those equal to the work of preparing the dinner of a large family. Visitors to Messrs. Hulett's stand should ask for their gas-stove list for April, which will show how much can be done by gas in the kitchen. Messrs. Hulett also show their new pattern sun-burner, with talc cones to prevent shadow on the ceiling. Mr. James Howorth, of Farnworth (349A), shows Fisher's patent sun-burner, with patent reflector and self-acting valve to prevent down draught. There are several other exhibitors of gas-fittings and stoves, among them being Messrs. H. & C. Davis & Co., of Camberwell-road (122), and Messrs. Wells & Co. (321).

Kitcheners and Ranges are shown in great variety. Mr. W. Addis (98, 123) exhibits Badger's patent lifting-fire kitchener, and a number of "Leamington" combined open and close kitcheners. Cundy's Economic Cottage Kitchener, or "Multum," is certainly an illustration of *multum in parvo*, for, within a space of 2 ft. 6 in. wide by 15 in. deep, it contains an oven 23 in. by 13 in. by 11 in., and a boiler to hold 6 gallons. A smaller size, 24 in. wide, has an oven 18 in. by 13½ in. by 10½ in., and a boiler of 4½ gallons capacity. In striking contrast to these is an 8 ft. kitchener, with roaster, pastry-oven, hot-closet, and grilling-oven. Messrs. Ashton & Green (160, 189) are exhibitors of kitcheners. Messrs. Brown & Green (374) show a good assortment of kitcheners and ranges, including their "Gem" portable cooking-stove. There are

numerous other exhibitors in this department.

Lifts.—Messrs. Clark, Bunnett, & Co. (162, 187), exhibit a very good lift with patent safety apparatus, brake, and adjustable balance-weight. The safety apparatus is very simple, and appears to be incapable of getting out of order. The same firm are also exhibitors of spiral staircases in iron. Messrs. Waygood & Co. (300, 309) exhibit some capital double dinner-lifts and plate-lifts,—labour-saving conveniences that must come more largely into use. They also show a self-sustaining hoist that should be looked at by architects about to specify.

Shutters and Blinds.—Messrs. Hodkinson & Clarke (136), of Small Heath, Birmingham, have erected a sort of pavilion or kiosk for the purpose of showing their specialties in shutters and blinds applicable to shop and house windows. These include the "Queen Anne" window self-coiling shutter, for internal use, which forms not only a shutter, but a sun-blind and ventilator. It is suitable for being used with advantage in hospitals and other institutions, for it does not exclude the daylight, although intercepting the rays of the sun. The "Early English" self-coiling shutter is capable of being used, externally or internally, for shop windows or in private houses. The pattern of the surface is agreeable, and when decorated for internal use has an exceedingly good effect. This firm also show the "window-blind of the period," the laths being thin strips of corrugated sheet-iron. We must not omit to mention that this interesting series of exhibits includes a number of stained-glass subjects executed by the firm. Messrs. Clark, Bunnett, & Co. (162, 187) are exhibitors of metallic Venetian blinds and of revolving shutters in steel, wood, and iron. These are of established repute. Messrs. Salmon, Barnes, & Co. (170) are exhibitors of their largely-used "Ulverston" revolving-shutters worked by patent balance-weight motion, than which nothing could be better or simpler. They are easy to work, and on this account are being applied as movable divisions between class-rooms of schools, &c. They have been used in some recent buildings of importance.

Of numerous other miscellaneous exhibits not hitherto mentioned by us, we may name, as a sample of the rest, Messrs. Legrand & Sutcliff's (138) valuable Abyssinian tube-well pumps and boring apparatus; Norton's patent turnstiles (shown by the same firm); Hobman & Co.'s (250, 269) tar paving, as laid extensively by them in the playgrounds of the London Board schools; Hamilton's patent prismoidal lens pavement lights (289, 320); Meakin's excellent self-acting sash-fasteners, and the same firm's sash-pulleys and lines (42, 87); Charles Fox & Son's patent "secure self-acting" window-fastener; and a host of similar things which belong to builders' ironmongery. Nor should we omit to mention the little fountain and fernery which has been placed on the floor of the hall by Messrs. Dick Radclyffe & Co.

There are many other things which we should have liked to mention had time and space permitted, but we have surely said enough to show the character of the exhibition, and induce our readers to go and look out the the good things for themselves. The exhibition, we may add, will be open daily (except on Sundays and Good Friday) from 10 a.m. to 10 p.m. until and inclusive of Easter Tuesday.

A TESTIMONIAL.

MR. R. A. MACBRAIR, Assoc. M. Inst. C.E., has been appointed engineer over the house connexions to the city of Lincoln, where the sewerage scheme has been devised by Mr. James Mansergh, Mr. J. J. Henderson acting as resident engineer. For nearly seven years Mr MacBrair has been acting surveyor to Oxford. Before his departure he was presented by many of the members of the Oxford Local Board, and all his workmen, with an address, a gold watch and chain, gold pencil-case, and a purse containing sovereigns, the balance of the subscription-list. The chain has a gold pendant in the shape of a medal, with the following inscription: "Oxford Local Board, March, 1881, presented to Mr. R. A. MacBrair, upon his leaving Oxford, as a token of esteem and respect." The address, which is too long to insert, expresses gratitude for the interest taken in the men, and mentions the good way in which his work has always been done.

THE NATURAL WEALTH OF IRELAND.

EXTRAORDINARY misconception appears to prevail with regard to the natural wealth of Ireland. It is known that the density of the population of that island is less than one-half of that of the population of England and Wales. It is known that distress is not unfrequent, that famine at times recurs, that rents are much lower than in the sister kingdom, and it is commonly assumed that all this is due to the natural disadvantages of the soil or climate, that the fertility of Ireland is not such as to support the natural increase of the population, and that emigration on a large scale is necessary to prevent that island from devouring her children, after the fashion of Saturn of old.

It is true that great difficulty exists in the way of obtaining any such clear idea of the actual capabilities of Ireland as would at once and effectually destroy this assumption. From some experience of the conduct of public works in Ireland, as well as from such sources of official information as are accessible, we have collected a few facts, which are of no little interest at the present moment. The object of their publication is to show that the natural wealth of Ireland is enormous; and that the field that she offers for the application both of capital and of labour is one that would yield the most lucrative returns, if the same degree of industry and of patient skill were applied that has produced such striking effects in analogous parts of England.

When the agricultural statistics for the United Kingdom were first compiled, now fifteen years ago, the details as to Ireland were collected by the constabulary and police, who acted as enumerators. It thus became known that out of the 20,322,641 acres which form the area of Ireland, 15,549,796 were cultivated. Rather less than 24 per cent. of the superficies of the island is thus left waste; while only 35 per cent. of the area of England, and 49 per cent. of the area of Great Britain, are now waste. Mountain pasture, however, is returned in Ireland, but not in England, as cultivated land. Out of the 15,000,000 cultivated acres of Ireland, 10,002,058 are permanent pasture. But even as to corn, which is not a crop for which the climate of Ireland is the most suitable, an acre was under cultivation for every 2·56 mouths; while in the United Kingdom the proportion was an acre for every 2·61 mouths, and in Great Britain it was almost exactly the same. Of this area, however, 78 per cent. is under oats, a rather larger proportion than in Scotland.

Taking, then, the actual state of agriculture in Ireland, it would seem that there is not so much cause for complaint as is usually considered to be the case. As to the enormous extent to which agricultural produce might be increased, one or two considerations are worth note. The soil of Ireland contains samples of the whole geological series, from the granite to the alluvium. It abounds in basaltic districts, in which the soil produced by the decomposition of the trap rocks is of the same character as that from which the industry of the Scottish farmers draws such extraordinary returns, in the neighbourhood of the Forth. Of the 24 per cent. of untilled land, a great part consists of bog. Bog, unproductive if left in neglect, is capable of being turned into the most fertile soil by intelligent care. By draining, by burning, or by top-dressing with mud, peat soils are rendered productive of rich crops of cereals or of grain. In England, more than 900 square miles of peat bog, in Fenland and Marshland, now yield some of the heaviest crops raised in the country. And the Somersetshire Levels, and neighbouring tracts of alluvium bordering on the Bristol Channel, treated chiefly by top-dressing with river mud, are now some of the richest pastures in England, while they were peat bogs at the commencement of the century. Thus in the main physical feature of the present desolate parts of Ireland is to be found a positive gold-mine, if only rightly worked.

The unusual beauty of the pasturage of Ireland is due to the same cause which renders many parts of that island so well suited for the culture of flax. It is customary to speak of Irish rain as if it were such as to render the island uninhabitable. This is only a result of generalising from imperfect data. Nothing is more deceptive than rain; and unless positive scientific admeasurements of the rainfall of any district are taken for a series of years, such terms as "wet" or "dry" are mere guesses, and can only mislead. But we have these measurements. They are annually published in "British Rainfall," which is compiled from the observations of more than 2,000 observers, spread over the United Kingdom. The year 1872 was an unusually wet year; 36 per cent. more than the average supply of rain having fallen. In that year, 244 in. of rain fell at the Stye Head, in Westmoreland. The least English rainfall, that of the Thames Valley, was 28 in. In the same year the average rainfall in the four provinces of Ireland was as follows:—In Leinster, 47·36 in.; in Ulster, 49·73 in.; in Connaught, 52·76 in.; and in Munster, 58·26 in. At the same time, the rainfall in the south-western counties of England averaged 52·66 in.; that of Wales, 61·77 in.; that of Cheshire and Lancashire, 52·70 in. The heaviest rainfall measured at any particular station in Ireland was 81·31 in., at Cara, in Kerry. Rainfall like this brings, not poverty, but wealth, if industry be applied to the soil.

Of the mineral wealth of Ireland we can only say that its positive indications are in the greatest abundance. As to coal, there are four large coal-fields and nine smaller ones. The area is not stated in that tabulated list of the coal-fields of the United Kingdom which is given in vol. xxx. of the Proceedings of the Institution of Civil Engineers. But if we can rely upon the map which is published in that volume, the Irish coalfields cover an area of considerably more than 1,000 square miles, the area of the English coalfields being 2,779 square miles. Six collieries are now worked in Connaught, thirty-two in Leinster, five in Munster, and twelve in Ulster. The coalfields of Ireland are as yet only scratched.

Iron, copper, lead, mundic, manganese, barytes, silver, gold, fire-clay, porcelain-clay, and rock-salt are all produced and mined in Ireland. The building stone of the country is magnificent; marbles, limestones, granite, and different kinds of free stone. The timber, when it has a chance of protection, is almost unrivalled. The Shannon, the Lea, the Liffey, and other rivers open cheap highways into the very heart of the country. The rainfall on the western hills affords a water-power which might be adapted to the service of the mines. The indentations of the coast afford numerous and excellent harbours, and the shore is so convenient for the fishermen that its measured length is longer than that of the coast of England, although the area of the former island is only five-eighths of that of the latter.

Thus in natural products, vegetable, animal, and mineral, in abundant fisheries, in noble inland waterways, in soil that will repay the utmost expenditure on it in labour, in climate that adds an unusual productiveness to the soil, for suitable crops or mining wealth, from which tin and zinc alone are absent,—or perhaps it would be more truthful to say, have not yet been procured,—Ireland offers a field for capital and for industry, as far as the physical nature of the country is concerned, to which it would be difficult to find a rival in any part of the old world. Its main want is patient and intelligent industry.

THE BRISTOL AND CLIFTON SKETCHING CLUB, AND JUNIOR ARCHITECTS' SOCIETY.

THE opening visit of the members of this newly-formed society was made to the Church of All Saints, Corn-street, Bristol, when there was a large attendance, amongst those present being the president, Mr. Chas. F. Hansom, F.R.I.B.A.; Mr. J. C. Monorieff, vice-president; Mr. E. H. Edwards, and other local architects. The President in his opening address proposed that, at each meeting, members should be told off to separate portions of the building, and, as "many hands make light work," the members would, by taking measured drawings, thus obtain complete details of each edifice visited, the exterior elevations, &c., as far as could not be obtained by the members, being obtained from extant plans or publications. The work thus executed could, the President surmised, be published at the end of the year, and under the supervision of the local architects, &c., as "Reminiscences of the Ecclesiastical and Domestic Architecture of Bristol," or some other suitable title. The President then urged upon his hearers the necessity of working accurately and clearly so as to make the work a reliable record, and concluded with a description of the edifice under consideration. The club appears to have started well, and the honorary secretaries (Messrs. G. E. Ford and W. E. Hill), have on all sides met with hearty support.

SETTLEMENTS.*

THE difficulty of addressing the Architectural Association now is far greater than it was ten years ago.

Ten years ago we were about one-fourth of our present size, and it was quite understood that what was said from the post I occupy to-night was said to an audience composed of junior members of our profession. There was only one view to be taken of our Association then. It was practically a body of students.

Times have altered. The students of ten years ago have developed into the practitioners of to-day, but still remain in our ranks, and from time to time attend our meetings. They thus contribute to the Friday *Lecture* a certain degree of increased importance. But they also contribute to the Friday *Lecturer* a certain degree of nervousness, lest what he has to say might have done for them very well ten years ago, but will not pass muster now.

The remarks which I have to offer on the subject of Settlements would be presumptuous if addressed to members of their standing. I would by no means presume to instruct gentlemen whose experience may very probably have been such as to enable them far better to instruct me.

It is to the Association in its student capacity that I should like to say what I have to say this evening. As to any who may be here and who have got beyond the student stage, I will ask them to hear me out if they can, and to give us a few words of wisdom by and by. Under the denomination of students may, I think, be included that large number who, while not too young to be more or less engaged in independent practice, are not too old to admit that they have something to learn as to the mode of conducting it.

Having thus cleared the ground and deliberately selected my audience, I will go on to explain my title. I admit that it is ambiguous, and that it may be taken as referring either to the structural or to the financial meaning of the word. A paper on structural settlements by some one well up in the subject would, I know, be interesting to many. I think we can call to mind more than one member of our profession who would snatch a fearful joy from frank confession of failures in foundations; of the perverse conduct of piers; of the obstinate refusal of thin walls to conduct themselves as though they were thick, or of the lighter scantlings of timber to behave as do the larger. In confessing my own inability to share such pleasures, I will hope that I have not been guilty of alluring to this meeting any who may have attributed the more ghastly meaning to my title.

It is of financial settlements that I wish to speak. These must occur in connexion with most of the buildings which come through your hands; I think these, therefore, should be of general interest. From the other sort I will hope that you may, with reasonable care, be delivered. If, however, you should not, you will find a few hints as to financial settlements all the more useful.

What can be more distressing than to hear the ordinary views held by the outside public as to the financial powers of the architects whom they employ? Who cannot call to mind many instances of works where difficulties of plan, of design, and of construction, and even of the contract sum, had all been happily surmounted, but where the breakdown came with the bill of extras? Where the alienation of the client was accompanied by a suggestion that the swollen outlay was not so pleasing to him as it was to the gentleman who took five per cent. on it? Where the unhappy architect was somehow or other credited with an innocent incompetency to fight a bill of extras, and, at the same time, with a kind of criminal adroitness and direct interest in causing it to come into existence?

The opinion entertained by an ordinary outsider on the subject of extras seems to be that if any of his friends be about to build, they must make up their minds to an increase of say 100 per cent. upon the contract sum; but that if he himself enter on any building enterprise, his own case must be the exception by which the rule shall be proved. The outside public has received some little confirmation of its views in this matter by the recent experience of the Corporation of the City of London. It will be many years before it will let architects forget that one may start to spend 5,000*l.* on a griffin and his surroundings, but ultimately find that he costs double that sum.

As to the circumstances which usually give rise to disputes about extras, I will quote Chief Justice Erle, who said:—

"It constantly happens that in the course of the performance of a contract certain deviations and additions are required, and it almost as constantly happens that the contract contains a clause that the party who asks for these deviations and additions is not to be liable to pay for them, unless some condition is performed, which is to operate as a security for the price to be charged for them. But again, almost as constantly, the party who executes such order, trusting to the spoken words of the other, takes no care to see that the condition is performed, which is necessary to entitle him to payment."

This "condition precedent" is, of course, the order in writing, always supposed to be the grand condition upon which extras will be allowed.

This "order in writing" seems to be most systematically neglected in many cases,—perhaps from the sheer impossibility of keeping up any system of written orders. One often finds that, in the early stages of the job, they have been given with punctilious care; but, as the work goes on, can it be that the zeal slackens? Or that it is found impossible to say, off-hand, what is or what is not an extra? I think the latter cause may have a good deal to do with the difficulty.

Still, I think that the order for a "variation" might be given without having on the face of it an admission that an extra is to be incurred.

I have seen more than one kind of lithographed form on which to order variations, the architect retaining the counterfoils; certainly a step in the right direction, and of great utility at the final adjustment. I have never seen any of these forms advertised by the law-stationers, but if brought out in some well-devised shape I think they would command a sale. I shall have something more to say about the ordering of extras later on. I would here only point out that it is well to be consistent in this particular, if you can.

I will now deal with some of the most frequent causes of extras. The most frequent causes may, I think, be summed up as follows:—Want of foresight on the part of the architect; defects in his drawings and specification; defective superintendence; the client's interference. The first three seem to be avoidable causes; it would be too much to say the same of the last.

Among extras caused by want of foresight I have observed the following chief offenders. Doubtless many others will suggest themselves to you.

First an insufficient survey of the site. This is one of the items for which an additional charge is recognised by the Institute scale, but in practice it is, I believe, very frequently thrown in with the five per cent. Perhaps on that account it is rather liable to be shirked.

When building on an open site the levels are too often taken by guess. The buildings consequently are found to be too high or too low, to the extent of perhaps only a few inches, but just sufficient to cause an aggravating increase of expense, in making up surrounding levels, in finessing with drains, in getting into difficulties with the damp course, or in facing at the finish, and at serious extra cost, some parts of the external walls which were not originally intended to appear above the ground.

When building on a site covered with or surrounded by existing buildings, plans, sections, elevations, and in some cases photographs of what already exists, can scarcely be too carefully or plentifully made before anything is pulled down. If these be shirked, and difficulties as to right of light, or air, or other easements spring up, these difficulties are much more troublesome to settle. It may be that the building either stands still, or is modified in its design, causing grievous disturbance of the contract and claims for all kinds of extras. The costs, too, of the lawyers whose aid has been sought by or thrust upon the client and his neighbours, are sure to be reckoned as "extras,"—and so they are. I think the record of buildings which are to be replaced by the new can scarcely be too perfect. And while on this subject I would say that where additions and alterations of existing buildings are intended my remarks apply with equal force.

Another cause of extras is want of foresight in finding out the nature of the soil. Too often it is assumed to be just like that of some adjoining owner. The evidence of a labourer who once saw a well dug out, or a sewer driven through, in the vicinity of the site, is trusted to. When you come to build, you find, perhaps made ground, perhaps springs, perhaps a seam of clay where gravel was expected. A few trial-holes would have solved the question,—good deep ones, going lower than the level at which it may be intended ultimately to stop, so as to know all about the subsoil. In our metropolis particularly, where it is often necessary to reach the London clay at a very great depth, this precaution is specially useful. A case occurs to my mind where the trial-holes revealed the existence of a portion of a disused burial-ground, and great, indeed, would have been the difficulties of the settlement but for this discovery.

Foresight in getting information as to local building regulations, which are sometimes more rigid than those of the metropolis, may save a good deal of expense. Foresight, too, as to the level of public sewers, seems too obvious a matter to refer to. Yet, quite recently, I heard of some houses which could not be drained, except at heavy after outlay, because the architect had either not tried to discover the level of the sewer, or, which is quite likely, had been misinformed with regard to it.

Then as to the trouble caused by defects in the preparation of the drawings. I do not believe that the blame is to be altogether, or even chiefly, visited on the architect, although he is, of course, actually responsible for them. Given unlimited time and unlimited staff, and there would be very little trouble arising from this source. Hurry is the bane of the architect, and is generally forced upon him by his client. It is strange to see some sober citizen, who, in all ordinary affairs of life, acts with the greatest deliberation; who will watch and wait upon a market with untiring patience, will invest his money only after the most mature reflection, will, even in the selection and purchase of the site, show the most perfect self-control; but who, having selected and paid for it, appears in quite a new light. From that time forth until the house is up, he is in what I have heard well defined as a "jackass hurry,"—an expression which seems to commend itself as a kind of expletive which escapes the charge of profanity. One does not observe the existence of this passion until a man comes to deal with bricks and mortar; but the cases are quite rare, in my experience, where it is not developed by building operations.

But there are other defects in drawings which I think lead to trouble at the finish, not due to hurry so much as to bad style of preparation. Drawings in which the power of drawing would seem to have been exercised chiefly for the concealment of the intentions of the draughtsman; drawings where artistic power is largely developed in the direction of skirtings, of architraves, of tile pavements and enrichments, to the neglect of the weightier matters of construction; drawings which, on the other hand, show too little, and where, from lack of knowledge or of enthusiasm, the sections are artfully taken through the least interesting portions of the plan; drawings prepared for the purpose of a competition, but not subsequently reduced to the level of common sense; drawings without figured dimensions, and which yet do not yield accurate results on the application of the scale; drawings made by much subdivision of labour, but at the cost of harmony between plans, sections, and elevations; general drawings deficient in large scale details,—and even in some cases details deficient in general drawings! All these and many other sorts of defects lend themselves to the manufacture of extras, because they all tend to make the basis of the contract shadowy and insecure.

As far as my experience goes in the matter of drawings, I have noticed the best results ensue where the general drawings have been made to a small scale and left in pencil, while the details to larger scale are being made. The small-scale drawings are then corrected wherever the making of the details has revealed some needed alteration (as it generally does), and the whole become part of the contract. I know how difficult it is to carry out this method in many cases, but I have certainly found it to be the best. I do not say that perfect drawings are a safeguard against extras, but we all know that they go a very long way to prevent them.

* Being a paper read before the Architectural Association by Mr. L. C. Riddett on the 1st inst., as elsewhere mentioned.

As to defects of specification, I have less to say on this head. No doubt, defects in this document do largely conduce to cause doubts and difficulties which (in spite of some ingenious and inequitable clause to the effect that all matters omitted are to be considered as included) are sure to have their influence on the settlement. But the author of really good drawings will not, I think, break down over his specification, provided that he has worked on the lines of some good model, and, having adopted a system, consistently followed it up and improved on it.

There is a style in specifications just as there is in drawings. Conciseness is dearly gained at the sacrifice of clearness, and clearness is imperilled where there is great verbosity. This sounds very commonplace; but I think it contains the general principle involved, which is all that I have space to set forth within the limits of my paper.

Defective superintendence of the works, especially where the works are at a considerable distance, where, moreover, there has been a little display of the weaknesses above referred to, and where the builder is not clever or possessed of a clever foreman, is another cause of extras. The blunders accumulate, and have to be corrected, and the settlement for extras such as these is not rendered the more agreeable by reason of their generally forming the subject of the familiar "voucher," with its mysterious prodigality in the matter of pecks of plaster, and bushels of cement, and hods of mortar, and much painful evidence of the small amount of work that can be done in an hour by a British workman, notwithstanding the advantage of a steadily-attendant labourer to stand by and see him do it.

Difficulties under this head do not, of course, arise where the job has the benefit of a good clerk of works. He can generally ward them off; but if by chance they do crop up, I cannot say that I have often found him able to exercise any very accurate control over the voucher. Perhaps his time is too much taken up with other matters. Perhaps, if it were not, the task would exceed the powers of a man who might be an excellent judge of work, but not good at checking accounts. When he is good at both he is a very strong man, and I am afraid you will not be able to secure his services until you have got some way beyond the stage at which I venture to advise you.

The foregoing causes of extras are, as I have said, avoidable. The other cause,—the client's interference,—can hardly be included in the same category. I speak of the ordinary client. There are some (very rare birds indeed) whom one gladly calls to mind as brilliant exceptions.

An eminent architect (who has visited and addressed us here) has often said, in my hearing, that the most satisfactory results he had achieved were in cases where the client saw least of the work as it went on. Perhaps it is only an eminent architect who can take that line. Younger ones may not be so experienced at seizing or interpreting their clients' requirements, or so sure of his seeing their work through rose-tinted spectacles at the finish. But as to the financial result, I think there can be very little doubt that a tour on the Continent during the progress of the job would be very beneficial, both to the client and to the contract, where expense is a matter of supreme importance. Where clients exist in the form of a committee or body corporate, the idea of temporary expatriation is hardly feasible. In such cases I need scarcely point out that the authority for extras and alterations is apt to be questioned by the authors, and that the record cannot be too carefully preserved if the architect is to escape the blame, or if the builder is not to escape the payment for them.

This brings me to another part of my subject,—the authority of an architect to order extras. Under the terms of the contract with the builder he is generally entitled to order them, and one rarely sees a contract in which his powers in this direction are expressly limited. I have seen a contract containing a clause to the effect that the signature of the proprietor was to be a necessary addition to all orders for extras; but I happen to know that it became a dead letter as the works comprised in the contract went on, and therefore in this instance it cannot, perhaps, be said to have been fairly tested. There is no need for me to refer to decided cases bearing on this point, because they are so readily accessible to any one who cares to peruse published works bearing on the question. Perhaps the most recent, and, at the same time, the best, of such works is Mr. Jenkins's little "Legal Handbook for Architects," published seven or eight years ago. I think every young architect ought to study it. Probably most of us have done so; but I will venture to quote Mr. Jenkins on the point in question. He says,—"Should the extras be ordered by the architect, it must be proved that he was authorised by the employer." But he goes on to say,—"It will be sufficient to prove that he was impliedly authorised." An implied authority does not sound like a very difficult matter to establish.

Quoting the same authority, I will here point out that orders for extras should not be retrospective. "The want of a previous order will not be supplied by one given subsequently to performance"; and also that the verbal order of the employer himself is insufficient to establish a claim for extras.

In the conditions of contract issued by the Royal Institute of British Architects there is the usual clause as to ordering extras in writing, but with the modification that "any plan or drawing expressly given and signed or initialled by the architect as an extra or variation" shall have equal force. And this seems fair enough up to a certain point. But is it quite fair to put the onus of discovering the discrepancies between detail and contract drawings upon the builder? This seems to me a subject for discussion. If all the chief detail drawings of the work can be made before the contract is signed, then the task of checking and comparing any subsequent drawings on their arrival might not be very heavy. But where, as is often the case, the detail drawings are called into existence as the work goes on, how can the builder be expected to say by mere inspection whether they contain more than was included in his contract or not? It seems to me that in the latter case, at any rate, such a clause as this, if inserted, should be very tenderly used.

In adjusting contracts where a clerk of works has been employed, one often notices a tendency on the part of the builder's agents to fix on him the responsibility of the extras, or a good many of them. No doubt, in many cases there would be very little harm in giving a clerk of works a certain discretionary power of ordering variations in construction which may be rendered necessary by some unforeseen circumstances, and which must be promptly dealt with. But where any such power is given, there is, of course, just a possibility of weakening the power to exclude unjust claims at the settlement.

When the work comprised in the contract is finished comes the question whether the account shall be prepared jointly by the architect (or his surveyor) and the builder, or whether the latter shall send it in for the approval of the former. I think that in most cases the jointly-prepared document leads to least difference of opinion. However honestly the builder or his agents may have intended to frame the account, their unassisted knowledge of the variations is seldom sufficient to enable them to render one which shall be quite free from criticism; and we all know how much more unpleasant it is to strike out than to prevent a claim.

But architects, although, perhaps, expected by their clients to possess an equal taste for art and science, are very seldom good at both. I think that if Charles Dickens had known a little more of the inner working of the profession he would have managed to say in his well-known ode to a member of it that he was "Architect, artist, *accountant*, and man." On the other hand, he would have been sure to have made capital sport of Mr. Pecksniff with a five-foot rod and a heavy bill of extras: so the eulogy would have been a good deal qualified, after all.

So far I have assumed that the settlement is to be a friendly one. It is hardly necessary to say much about settlements of a less pleasant complexion. The matter quickly leaves the architect's hands. The arbitration clause comes into operation, and where there is any great display of obstinacy on either side it saves a great deal of trouble, no doubt. Unfortunately, the eminent members of the profession who are wont to be appointed as umpires are often well qualified for the position in all respects save that of a knowledge of accounts. If the case be large enough to justify calling in a surveyor assessor to sit with the umpire and to deal with the measurements and prices, no harm is done.

There is something in a name,—and although by any other name "extras" are no cheaper, I think some of the sting is removed by calling them additional works. I note that the Institute conditions adopt this phrase, and there is certainly less of a suggestion of spontaneous growth in the term "additional works" than there is in the other word. The one phrase seems to imply that the client ordered more to be done, the other suggests that the architect "let him in";—the word may be good enough, but this is the meaning which it has to a great extent acquired.

I shall be leaving a very important part of my subject untouched unless I say something about the valuation of the variations, always supposing that the necessary steps have been taken to settle the extent of them. The schedule referred to in the Institute Conditions of Contract is supposed to govern the valuation, and this schedule is, as we know, in the majority of cases a copy of the builder's detailed estimate. The use of it presents little difficulty, if the user cultivate that judicial impartiality to which it should be his ambition (as it is by practice in his power) to attain. But where there is no such schedule the difficulty is sometimes very great. I often wonder why the ordinary published price-books do not take a little more trouble to keep pace with the times. Perhaps it is beyond their power; the differences of locality and the rapid fluctuations of markets must render it very difficult. Still, I think that a good deal might be done, and that if a trustworthy, not too-elaborate, price-book were published in London and in the provinces (just as the Post-office Directories are), giving the prime-cost rates of builders' work in the several localities, it would be extremely useful. I fear I cannot say to what extent such a venture would be profitable. One result of such a publication would be a great assimilation of modes of measurement,—a very desirable reform. More work would be let on schedule, insuring perhaps better work, because it would be done with a certainty that it was not being done at a loss; and the little country builder, very good at his work, but very weak in his estimating, would perhaps be able to realise that modest fortune, which, under the present system of tendering, seems only too certain to evade his grasp. Perhaps at some future day our Architectural Association and its allied societies throughout the country will be able to do something towards collecting information of the kind.

I spoke of the schedule referred to in the Institute conditions. In this particular (as in some others which it is not within my province to mention here) the conditions are a little weak. They do not clearly say that the bills of quantities are the schedule, although we know that where quantities have been supplied they generally do form it.

The question of the cost of measuring variations is, perhaps, one which fairly comes within the limit of my paper. Where an outside surveyor has been employed, his fees, as we all know, are generally added to the extras, and, as we probably all also know, would be the subject of much indignation on the part of some clients if they knew they were paying them. This is very unreasonable and unfortunate. I hope the day will come when the position of the measuring surveyor will be more clearly defined with us, as I believe it is in Scotland and on the Continent, and that there will be no mystery whatever about the matter.

Settlements in those parts of the country where the sub-letting of the various trades is the rule, are perhaps the most tedious and troublesome of any. With five or six different sub-contractors to meet, it may be well imagined that there is room for occasional controversy. The rule with some architects is, I know, to deal only with the contractor-in-chief, and to leave him to settle with the rest. Probably this course is the easier; although in practice I admit that I have generally followed the other. There is certainly an advantage in going over the work of each trade with the man who is a perfect master of that trade. One is pretty sure to get some practical wrinkle in the course of the interview which quite compensates for the additional trouble involved. In passing, I may, perhaps, observe that for districts where work is thus sub-let, the conditions of the contract require to be modified as regards the sub-letting clause ordinarily inserted for London jobs. Not only should the sub-letting be recognised, but the architect should reserve some sort of right of approving the sub-contractors, if he means to have the work properly done.

A good system of settlement (but one not always practicable) is to agree not only as to what are extras, but as to what is their value, as the works proceed. One hears and knows

of cases where this has been done, and where, of course, much trouble has been saved; and it certainly sounds like the simplest thing in the world. But supposing you cannot agree? There is then nothing for it but to fall back upon the old system. Of course, the arbitrator could be called in, but that would be too ludicrous. You could not have an arbitration once a week.

It may occur to you that I have omitted to abuse the builder, and to quote him as the creator of extras. I can only say that the omission is intentional. One can but speak from one's own experience, and mine may be of the more fortunate sort; but I have not found that contractors, as a rule, desire to create extras. When a contract is taken, the builder, if he be a man of any method at all, and in a fairly large way, of course makes his arrangements for certain supplies of materials and labour, all of which arrangements are apt to be upset if there be any material alteration in the intended works. It is not necessarily to his interest to have any such disturbance.

I must not forget to refer to one sort of settlement which is quite free from extras. Under such a system as that to which I just now referred (building by schedule), there would, in a certain sense, be no extras, and there would be one bugbear the less to worry the architect.

I do not know how far the Scotch or French architects, who build by schedule, may suffer from the difficulty in question. In both those countries the work is, as we know, measured and valued on a schedule. In Scotland, and, I presume, in France, some kind of estimate is given. But, where it is understood that all is to be measured at the finish, I do not see how the absolute total cost can be calculated beforehand. No doubt, it is understood that it is approximate. Speaking to a French architect on the question of the cost of work, a short time ago, he assured me that, in his own individual practice (and he has a large one), a client was always very meek and manageable on this score, and "he lends me his purse," was the expression which he used, in order to convey the idea of his complete docility,—a beautiful and resigned spirit, quite unusual among English clients, so far as my experience carries me.

A very familiar form of extra is that which arises from the weakness of sub-contracts. The chief contract embraces, perhaps, a number of provisions as to gasfitting, hot-water work, sculpture, stained glass, and other decorations. You make sub-contracts with various tradesmen or artists. At the close of the job you find that you were not quite so careful in the clauses of your specifications for these sub-contracts as you were with those of the specification-in-chief. What I say may sound superfluous, but I have a good many accounts to deal with, and I get only too much evidence that it is not. There is sure to be a loophole for an extra in some of these items. The gasfitters have required and received such an amount of attention from the carpenters that you could almost believe that they had been lady gasfitters! The hot-water man wants you to find him all the materials for setting his boilers and building his flues, and often all the labour too; but he was not nearly so emphatic about these requirements before signing his contract. You ought, perhaps, to have understood him more clearly. I do not say it was his fault. The other people scorn to bring so much as a step ladder on to the premises, and proceed to use the plant belonging to the builder, who, instead of carting away his scaffold-poles and cords and planks, practically invests them at a good rate of interest, charging so well for the hire of them that you might almost expect the "plant" to fructify in its unexpected state of prosperity. The carver has no scaffolding, and you must not only find it for him (unless you bargained otherwise), but must shift it about to suit him. I do not say that any of these claims are fictitious or unjust. I merely remark that you should guard against them.

A cause,—though a less frequent cause,—of extras is the old "p. c." difficulty. You provide your little sums of money for locks and latches, for stoves and chimney-pieces, but you have omitted to say that the amounts did not include the builder's profit. You are not too busy, perhaps, to go about and order these things yourself. When you get the bill you tell your builder to pay it, and he does so; but if he find the merchants deaf to his appeals for discounts, he fairly enough charges your client with a profit. You cannot object, because you had omitted to put the letters "p. c." after the sums provided, or to arrange that he should have a discount. This, again, is a most elementary piece of instruction, and I am almost ashamed to introduce it, but I know it is a caution much required by those who have not had experience in difficulties of the sort.

Another cause of extras in connexion with the prime-cost difficulty occurs to me. The preventive is simple enough; but the difficulty often arises. Your client being anxious to choose his grates or tiles, or some similiar little matters, all provided in the contract, but in the selection of which you give him discretionary power, asks you to take him round to the head-quarters of the dealers in such things. The merchant supplies the goods, and invoices them to your client or to yourself, and does not press anybody for the money. The account has been delivered to you, but you have sent it on to your builder to pay. Circumstances over which he has no control, or at any rate you have not, prevent him from paying it at once. The same circumstances, however, induce a rather speedy winding-up of the contract accounts, and you give your builder a certificate for his balance, quite unconscious of the fact that the goods remain unpaid for. "Circumstances" again assert themselves in a way unpropitious to your late contractor, who liquidates, and starts again, regenerate and ready for fresh troubles. You are a little surprised to find the merchant so calm and unmoved. Having just settled down to admire this good man struggling,—one might almost say, satisfied,—with adversity, you are further surprised by the delivery of his account, made out to you or to your client. The disturbing effect of this upon your recent settlement is easy to imagine. The preventive is equally easy. Take care another time that the order to the merchant goes through the contractor.

The grandest safeguard against extras is, of course, the "money provision," to be expended as directed. I think the builder generally is directed to expend it. In contracts of a heavy sort for public bodies who are perhaps borrowing the amount which they propose to spend, and who perhaps cannot afterwards enlarge their borrowing powers, ten per cent. would be a prudent provision. With an ordinary client, I think that a sum of at least five per cent. on the amount of the contract should be thus placed at the discretion of the architect. And it is all the better for the client if he does not know the extent of the provision. However perfect may be your confidence in your client, or his in you, I do not believe that he can, as a rule, be safely trusted with a money provision. He will spend it three or four times over.

A word with reference to omissions will nearly finish all I have to say on the subject of settlements. Some system of booking omissions at least as clearly as the extras are recorded is much to be desired. No doubt, the young architect with one job will be pretty clear as to his omissions; but when work gets more plentiful, and particularly when it happens to spread over a long term, he is very likely to forget a few of them. Most architects have, I fear, a kind of horror of bookkeeping; but a certain amount of it is a necessity, and will save much time in the end. At any rate, a little debtor and creditor account might be kept against the "provisional" items, by which could be seen at a glance how you were getting on, and when to enforce severe economy with reference to these. Many an unpleasant surprise at the finish would be spared by even this little exercise of commercial intelligence.

And now, to conclude, I am only too conscious of having left unsaid much that might have been said, and of having said much which, from its "elementary" character, might have been omitted, and yet have left many of you none the less instructed on the subject.

I started by saying that I desired to address those members of the Association who were still in the student stage, or but at a very slight remove from it. I have assisted at many meetings and classes in this room, and have learned many useful hints in attending here. The instances have been rare,—in fact, I can remember none,—in which the lecturer has put anything too simple before us. I trust that you will forgive your lecturer this evening if he may have been the first to transgress in this particular.

Mr. Woolner is completing a mural monument to the late Sir Edwin Landseer.

NIGHT TURNED INTO DAY IN LONDON.

London has often been illuminated to celebrate a victory or a peace, the accession of a sovereign or the anniversary of some great public event. But the 31st of March, 1881, will be memorable as the first occasion on which the City was aglow to celebrate a sort of scientific jubilee. The object, moreover, of the beautiful display was eminently practical. We may call it, at all events in one sense of the word, the most brilliant experiment ever made. From Westminster to Lambeth, from Farringdon-street to the Mansion House, from the Bank to London Bridge, "the time of slumber was as bright and busy as the day." Many of our readers will have been among the dense crowds who made holiday in that electric lustre; and the daily papers have been full of accounts of the unexpected splendour of the scene.

It is worthy the fame of London that so bold and thorough an experiment should thus be carried out. The opinion of the public is now fairly appealed to. We shall have, by and by, the financial part of the question fully and fairly brought before us. Meantime, the questions of the regularity of the light, the permanence of its display, and the effect produced on the eye by the different regulators, or electric lamps, will be fairly tested.

It should be remarked that, although it was as late as 1853 that the first magneto-electric machine capable of generating a sufficient current for the production of a very great light was made by Professor Holmes, magneto-electric machines are now things of the past. They had displaced the earlier method of generating the electric current by galvanic battery, which was the method by which it was first proposed to elicit power, rather than light, from electro-magnetism. It is worth remark that the electric light (produced from the magnet) was first known to the sailor on the 8th of December, 1858, the day sacred in Roman Catholic countries to the Virgin as the protectress of the seaman. Nine years later Siemens and Wheatstone discovered the means of producing powerful electric currents without a magnet, a discovery as important as the original discovery by Faraday, in 1831, that a magnet could be made to produce a current of electricity in a coil of wire. The second discovery has so far changed the course of scientific invention that neither of the competing illuminators of London now makes use of a magneto-electric machine. The Brush light shown in Vine-street, Lambeth, and on Ludgate-hill and Cheapside, is produced by the Brush dynamo-electric machines. The Siemens lights in King-street, Queen-street, and King William-street, were supplied by six Siemens dynamo-electric machines, and the Brokie lights, used by the British Electric Light Company, Cannon-street, were produced ny two Gramme dynamo-electric machines. Steam-engines, of 32 horse-power, and of 25 horse-power, are mentioned as affording the generating power for the Brush and the Brokie lights.

It is remarkable how science seems thus to complete its circle. In the dim light of ancient legend we catch some glimpses of a time when the mystery of producing fire was held to be of a sacred nature. The Greek stole fire from heaven; the Roman entrusted it to the watch of a virgin priesthood; the Jewish priest kept it ever burning on the great altar, whither it had descended from heaven on the consecration of the temple; the Parsee worshipped flame as a divine emblem; the quaint gammated cross, or *swastica*, which is one of the most ancient symbols engraved by prehistoric races, is thought to represent the primitive fire-mill, or method (still in use in India) of producing fire by twirling a stick round on a block of wood,—in fact, of producing flame by friction. In another mode, and introducing other intermediate agents, the steam-engines of Brush and of Siemens are now, like the drivers of the earliest fire-mills, converting energy into light.

We cannot but feel that a very great step has been taken in the progress of civilisation, and we shall look with interest for the results of steady experience as to the different methods. The particulars of the Brush and of the Siemens system are tolerably well known. It is a remarkable proof of the rapidity with which invention proceeds, that in the last treatise on the electric light that has come to our hands (published by Messrs. Spon in 1879) we do not find the name of Brokie, which is attached to the ten lights, each of 6,000 candle-power, displayed at the Cannon-street Station.

OLD BRIGHTON.

ONE of the most celebrated,—and for a considerable period, when royalty favoured it more often than it does now, the most celebrated,—of all our seaside resorts is that still charming Sussex town,—Brighton. In the season or out of it, the place is a miniature London—but yet not London, for it has the sea at its feet,—grown to the extent it is in a very brief period. For who would suppose that the fishing village known as Brighthelmstone, with a population of something like 3,000 a century ago, with about 700 houses, and an assessment of 2,300*l.*, should, in this present census year, have a population of nearly 100,000, houses numbering nearly 16,000, and an assessment amounting to 528,899*l.*? Brighton has, indeed, proved itself a true disciple of progress.

On the eve of a new census, when the eyes of scrutiny are turned into every nook and corner of our empire, we have been fortunate enough to discover some interesting facts relating to "Our Village" of a bygone age. At first we hesitated before putting into print what some would call musty, senseless stuff, but the majority of our readers will, we are sure, be glad to have a summary of our discoveries; for they will, at least, prove interesting, and possibly of some value to those who take an interest,—and who does not?—in our progress.

Our Brighton is old Brighthelmstone, for that is its correct name. There is a place called New Brighton in another part of England,—for our nation delights to multiply names, if only to mislead us,—but there is only one Brighthelmstone, and that is popularly known as Brighton.

It is impossible for us to dive into the mysteries of how it commenced its history or got its name. Some writers have presumed to trace it back to fabulous times, even asserting that Brighthelm, the bishop of Wells who was made archbishop in 958, was murdered on the Sussex downs. But one thing we do know, and that is sufficient for our present purpose,—it is written in Domesday, and that great census return was compiled just 800 years ago,—Bristelmestune, and from that time it has been called Bredhampston, Brightelmsted, and finally Brighthelmstone.

The manor was anciently owned by the son-in-law of the Conqueror, who had granted him a very considerable portion of the county. The Earls of Arundel and Surrey held it till Henry VIII.'s time, and that king granted it, with others, to his queen, Anne of Cleves. The Sackville and Dorset family were holders from the eighth year of Queen Elizabeth; it then passed to the Earls of Thanet and the Shirleys, and eventually Thomas Friend, the mercer, of Lewes, in 1737–1743 became lord of it, from whom by will, dated in 1761, it descended first to his nephew Thomas Friend, and upon his death in 1763 to his other nephews, John and George Kemp, whose descendants gave name to the new and aristocratic building estate adjoining, called Kemp Town.

Whatever the extent of our fishing village was in 1313, we are told a market was granted for it at that date to John de Warren, the Earl of Surrey, and if this be true, the place must have shown early signs of progress. But royal grants were easily obtainable at that date, and even centuries later we could prove that a grant of a market and fair was made by one of our kings to a place in Kent, to be held the same day as one was held half a mile distant.

But as for Old Brighton, it was, after all, only a small fishing village even down to Henry VIII.'s reign. In his fourth year, in 1513, the French took it by surprise one night, pillaged and burnt it; and we have seen a letter, dated the 5th of June, 1514, in which the English admiral declared he would be revenged by burning Calais. It was then called "Brightenstone." "Our neighbours across the Channel" were not so friendly then as now, and they made another attack in July, 1545. Hollinshed, the chronicler, tells us that the French Admiral, with a fleet (200 ships and 26 galleys), "arrived on the coast of Sussex before Bright Hampstead, and set certain of his soldiers on land to burn and spoil the country, but the beacons were fired, and the inhabitants thereabouts came down so thick that the Frenchmen were driven to their ships with loss of divers of their numbers, so that they did little hurt there." There is a very interesting but very rough plan of this attack in the British Museum. It exhibits about 20 ships before the "town," which shows it to have then stood west of the Steyne, of but a few houses in one or two streets, with "a felde" in the centre; two windmills, and "the bekon," which was the only means at that date of spreading the news of danger or distress. The church stands on the hill, and some of the houses appear in flames. Between the "felde" and "east pte of Brithampston" stands "the towne fyre cage," and opposite to it is noted, "Here landed the galeys." The west end of the town, where "Hove village" and "Hoove churche" are seen, the village being represented by a dozen houses, is described as "low, all dangerous, and w^th^out cleves." This plan is engraved in "Archæologia," and in Horsfield's "History of Sussex."

The want of the means of defence had no doubt been greatly felt by the residents, who, in 1558, obtained the grant of a piece of land, upon which they erected the Block-house, and in which they stored powder, and upon which they mounted four pieces of iron ordnance. The building was circular, 50 ft. diameter, 18 ft. high, and 8 ft. thick. In 1749 part of the Block-house was washed away, and in 1761 a battery of twelve 24-pounders was erected; this was likewise washed away in 1786, and it was considered very providential that seventeen barrels of powder did not explode when the building fell.

In 1580 a very interesting and valuable "Book of all the Ancient Customs" was "set downe in wrytynge." It was "Upon supplication by y^e^ ancient fishermen of Brighthelmston unto y^e^ Right Hon^ble^ ye Lords of y^e^ Councell for remedye or redresse of certaine disorders in their towne touching y^e^ annual payment of certain moneys called a quarter of a share heretofore of ancient time usually paid oute of every boate in every fishinge voyage to the churchwardens there towards the maintenance of their church and other publick charges about the necessary defence of the towne." The customs were eight in number, but the extent of the place as a fishing population was even then of some extent. "There are, also, in y^e^ said towne of Brighthelmstone of ffishing boates four score in number; of able mariners 400 in number, with 10,000 fishing netts, besyde many other necessaryes belonging to their mysterie." The fishermen complained that they were sore pressed for service at sessions and as soldiers, "especially by the reason of y^e^ great scarcity and dearthe of tymber and wood now of late years by means of iron furnaces placed neare y^e^ downes, and rising from 3s. 4d. a tonn to 13s. 4d.; from 2s. 6d. a load of wood to 7s.; and from 6s. 8d. a loade of coale to 14s.; and of billet or tall wood from 2s. 6d. the 100 to 8s.; and ship boorde from 16s. the 100 to 50s."

We are told that "the master of every Brighthelmstone boat, at St. Stephen's day next after his return from any voyage, paid out of his whole profits of the boat a quarter share to the churchwardens, half share to the vicars, and the other quarter to himself . . . .. The said wardens have used to employe the said quarter share especially upon buildinge of fortes, of walles towards the sea, for the defence of the sayde towne, and for provision of shott and powder, and other furniture for that purpose, and entertainment of souldiers in time of warre, and other public service of the prince, and mayntenance of the parish churche." But in order that there should not be any abuse, a landman and two fishermen were to be annually chosen as chief of the town and for churchwardens, and no money was to be spent other than for that particular purpose, unless the constable, vicar, and "six substantiall men of the parishe," four fishermen, and two landmen, should otherwise order; the penalty being the payment out of their own pockets. A yearly account is to be rendered under a penalty of 40s., and each warden neglecting to demand such (or the fines) within six days after he has knowledge thereof, "shall pay to the poore man's box of Brighthelmstone 3s. 4d., or else answer it before the commissioners." The town property to be let away every seven years at the best rent to be obtained, under a penalty of 5*l.*, to be paid by the warden! And they were to keep in store four barrels of powder and forty round shot and tenne chaine shot for every great piece. In carrying out his duties the constable was to be assisted by eight fishermen and four landmen selected from "the auncientest, gravyest, and wisest inhabitants."

One of the rules we take pleasure in recommending to those who profess to carry out the Building Act:—"Item yf any man hath heretofore build or erect or set upp any wall, pale, shedd, or any such like thing whatsoever, or if any shall erect or sett up any house wall shedd or other such like thing whatsoever to the annoyance of the markett place or of the block-house there and shall not upon warning given him by the constable or his deputy for the time being pull down or remove away the same within ten days after such warning given that then he shall forfeit 5*l.* and be further punished by the discretion of the Commissioners."

Each of the twelve assistants to the constable to have a district assigned to him, so that good order may be kept, "for as muche as the towne is overcharged with the multitude of poor people which daily are thought to increase by means of receiving undertenants, lodging of straungers, and the disorder of tippling-houses." And "yf any owner or lessee of any house w^th^in Brighthelmstone shall admitt any tenante or tenants undertenant or undertenants into his said house except y^e^ same tenant or tenants shall by y^e^ opynyon of y^e^ constable and the churchwardens in wrytying first to be set downe be thought of sufficient habiltye to mayntayne himselfe and his familie without burdeninge of y^e^ towne then the said owner or lessee shall forfeite for every month that any such tenante not being estimated as aforesaid shall inhabit or dwell in his saide house unto y^e^ poor man's boxe 3s. 4d."

A very interesting list of names of 100 parishioners charged with a rate for the purposes of the town shows that forty-four paid 4d.; six 6d.; sixteen 8d.; nine 1s.; seven 1s. 4d.; two 1s. 8d.; seven 2s.; three 2s. 8d.; three 3s. 4d.; one 4s.; and two 6s. And the town property in trust with the churchwardens was "one wyndemill purchased of the Queenes Majestie"; the town house east of the block-house, and the block-house itself, "of flynt, lyme, and sand, of late yeares erected and buylded in warlike manner by y^e^ fishermen."

We could not resist the temptation of giving our readers an insight of how they managed things at Old Brighton just 300 years ago, and at a time when they had for its defence four iron pieces with shot, and ten qualivers or small cannon!

But our poor fishermen felt far from secure, and in 1626 they prayed for a guard against the Dunkirkers. Two years later a letter describes the taking of a bark by three French ships and pinnace off Shoreham, which brought the natives to the rescue, who borrowed of Brighton one of their guns. But a good capture was made in 1630. A Dunkirker was chased and there taken. It was of 160 tons, had 78 men and ten pieces of ordnance. The vessel was destroyed, the goods were divided among the Brightonians, and the ordnance kept "for the safeguard of the town." What was done with the crew is not stated. In 1637 "The Willing Mind," of "Brethampston," was one of the boats employed in carrying stone for the repair of St. Paul's Cathedral. But in the year 1653 there is a remarkable petition extant, and at the present moment its purport is particularly interesting. Twenty-two inhabitants of Brighthelmstone beg to thank the Admiralty Committee for paternal care, &c., in past times, and now desire a renewal of it. Fifty ships are about to sail on the 20th of August for the herring fishery at North Yarmouth, but the enemy are daily annoying the coast and taking the barks, and therefore it is requested that a convoy may be sent to carry them to the fishing-grounds, wait upon them there the whole season, and bring them back again. Truly our Brighton friends' assurance was not wanting; but we are not told whether their modest request was complied with.

There is one other event of the seventeenth century closely associated with Brighton, and that event is now the most memorable one in English history. We allude to the escape of Charles II. Various accounts of it have from time to time been printed, and the majority of our readers must be pretty well acquainted with the romantic details of how the "Merry Monarch" managed to get away from his deadly opponents at Worcester; how, for six weeks, he was on his perilous journey south; how he reached Racton House in October, 1651; how, after some startling escapes, the royal fugitive took refuge in a then small inn in West-street, but now known as the King's Head; and how, under the care of Mr. Smith, the innkeeper, and of "Captain" Tattersal, the owner of the coal vessel then discharging a cargo, Charles II.

passed "across the water," and found a safe retreat at Fécamp. Brighton is so full of anecdotes about royalty that it is not surprising to find the entertaining local historian, J. G. Bishop, giving us one about this escape. It is this: an ancestor of the Cooke family was talking with the hostess of the King's Head, when Tattersal (or Tettersell, or Tetersole, as his name is spelt) entered in a hurry, calling out, "Mistress, give me a clean shirt!" Mistress, like a woman, revolved curiosity in her mind, and said, "Tettersell, if you want your clean shirt to-night, you're going to see the King." "Hush!" replied he; "give me the shirt"; which, being brought, he buttoned his rough coat about him, disappeared in the darkness, and was next heard of as having landed the King in safety on the French coast. The King's Head had a huge bough of oak suspended over its entrance until 1830 on every 29th of May, while in 1844 the footposts of the bed on which the King slept on the eventful night of his escape (so the story goes, but we think the King had little time then for sleep) were actually offered for sale in Brighton! When the King returned "home," at the Restoration in 1660, Tattersal was, after some difficulty, awarded, as he deserved, a pension of 100 guineas a year, which was to remain to his son after his death,—in all for 99 years. But it only lasted for fifty, being then withdrawn, while, curiously enough, a pension to another royal favourite, created about the time this was stopped, still exists! Even State pensions have their history.

Tattersal, however, received the rank of captain, and a grant of arms, with the royal lion on the shield. His "Coal-box" was re-named "The Royal Escape," and even this shared the fate of less nobler vessels; it was broken up at Deptford for firewood in 1791. The owner himself died in 1674, and was buried near the chancel-door of Brighton Church. In his will dated July 26th, and proved October 30th by his son Nicholas, he is described as "Nicholas Tetersole, senior, of Brighthelmstone, in the county of Sussex, esquire." He left a large portion of his property to his son-in-law, John Geering, the residue to his son, and forty shillings to the poor. "Nicholas Tettersell," junior, died in 1690. He is described as of "Brighthelmstone," and of the vessel called "*The Royall Sovereigne.*" The blood of the Tettersells has descended (by intermarriages), and is now represented by the Sussex family of Shiffner.

In connexion with this escape one more note may be interesting. Richard Pendrell, who conducted the king from Worcester, died in 1671. We read that in 1827 his descendant, John Pendrell, died at Eastbourne, aged 70, and that his son, who formerly kept the Royal Oak at Lewes, was then a clerk at the Gloucester Hotel in Brighton!

With the eighteenth century dawned a new era in the history of Brighthelmstone. One of the first events was the opening of a Friends' Meeting-house in North-street in 1700. The days of persecution against the Quakers were really at an end, and need be, seeing that in 1658, a widow woman was observed speaking to a priest of the Steeple-house in the town, which caused the mob to "bruise" her, to put a rope about her neck, and lead her out of Brighton. Another woman was also stoned, and even the persecutors boasted that they had then killed a Quaker, upon hearing which the ignorant people raised a cheer!

In 1723, the groynes were commenced, and not a bit too soon, seeing the ravages which the sea had made, and as now existing their utility has been often proved. Some five years since a concrete one was made opposite the Aquarium.

In 1746 died one of, if not the oldest of, the real Sussex carriers. The "carrier" of 150 years ago was a very important personage. The people depended upon him for everything; for what we now know as the stage-coach, the steamboat, and the railway, was not dreamt of. Mary Smith, widow of Thomas Smith, started her wagon every Thursday morning from the George Inn, Southwark,—wind and weather permitting, or, as the advertisement says, "If God permit." It is not stated how long she took for the journey; but in 1756 "the Brighthelmstone stage" was started, and then began real competition. In Mr. Bishop's very interesting "Peep into the Past, or Brighton in the Olden Time," there are some curious details of the early history of the coaching days. In 1757 was started "a four-wheeled post chariot, with a pair of able horses and a careful driver,"—the latter a very essential part of the conveyance. But even the post chariot was eclipsed by "the Flying Machine," which actually carried four persons instead of two. The fare was 16s. each to Brighton, and 13s. to Lewes, with 14 lb. weight of luggage allowed, "half the fare to be paid at booking, the other at entering the machine." Outsiders and "children in lap" were charged half price. The "Flying Machine" started from Charing-cross at six o'clock every alternate day, and took its own time to do the journey. Occasionally there was a "spill,"—and, as competition increased and fares went down, they were not very particular about other matters. Fast as they were, their opponents would have their say. A stage stopped at a wayside inn door. By comes a man with a wooden leg. "Well, Jim," says Coachee, "how are you? Jump up, you are welcome to a lift." "No, thankee," replied Jim, "I'm in a hurry!" In 1770 there were two machines and a wagon on the road between London and Brighton, and 100 years ago a common stage-wagon left Southwark Tuesday morning at three o'clock, and reached the Sussex coast on Thursday afternoon,—three days and two nights after! To make such a journey then was a very formidable affair; persons have been known to make their wills before setting out, for the dangers of the road were great. It was more excusable then to be detained on a journey than in this nineteenth century, when a railway company actually, in the late snowy season, took a train full of lawyers, from the judge downwards, on their way to hold the Kent assizes, and when they got half-way brought them back again because the line was blocked, a fact which was known before starting! Even in 1728 Lady Judith Shirley, one of the good old Sussex family representatives, who was widow of Sir Richard Shirley, who died in 1713, and of Sir Henry Hatsel, who died in 1714, specially recognises the evils of road travelling in her will. She says:—"My body I commit to the earth to be decently buried in the parish church of Preston, in the county of Sussex; but if I shall depart this life at such a time of the year as the roads thither shall be impassable, then I leave it to my executors to bury me where they shall think fit." She left to the poor of Brighthelmstone 20*l.*

Before Dr. Richard Russell took up his residence here in 1754, the place had been getting into some note for its sea bathing; but to him the early prosperity of Brighton is certainly due. He bought a copyhold cottage and ground on the Steyne for 40*l.*, or at the rate of a pound a foot! He purchased four other buildings, and for 26s. a piece of ground adjoining, and to the astonishment of the natives erected on the whole site the largest house in the town. It was so large that the Duke of Cumberland subsequently rented it. The Albion Hotel in 1826 was erected on its site, and then, says Mr. Bishop, "a noble opening to the sea south of the Steine was lost, most probably for ever." Dr. Russell having spread the fame of Brighton, a large assembly-room was then considered necessary, and from that time downwards the balls and gatherings have been noted far and wide. The last master of the ceremonies of the old school was Lieut.-Col. Eld; he and his office died together in 1855. When he was chosen in 1827 it was worth 1,000*l.* a year.

It was on the 11th of July, 1765, Royalty paid its first visit to Brighton, in the person of the Duke of Gloucester, and great were the preparations. The Duke of York followed in 1766, and as fashion only required a leader, so the company flocked down there until it was notified in 1769 "few lodgings are to be had in the whole place." A stag was turned out for the benefit of the visitors. A century ago, Dr. Johnson, author of the Dictionary, paid it a visit, and held an argument with Michell in the ante-room of the dancing-saloon. The Doctor argued with more than usual force, for he seized the tongs and Michell the poker, and each impressed the other with the weight of the argument by thumping the grate violently, which might have led to other blows had not the M.C. come in and separated them; as it was, the country dance was interrupted.

A theatre was next opened, and that was in 1770, on July the 24th. It was advertised that pieces would be performed "with the utmost decency," and we are told that "a numerous and polite audience" was present. The performance commenced at one and ended at half-past two, so that the assembly-rooms were not interfered with. A permanent theatre was opened in North-street in 1774, and in 1777, upon great complaints made, it was announced that "the best spermacetti oil and wax candles" would be used in lighting up! Part of the establishment of a theatre of the olden time was a "candle-snuffer," to wit, at old Drury, in 1812. At the Brighton theatre, in September, 1788, the Prince of Wales, the Duke of Gloucester, Mrs. Fitzherbert, and all the fashion, were there three times in one week, and the notorious Earl Barrymore, better known among his acquaintances as "Hellgate," tried his skill as actor. This Earl Barrymore was the fastest of the Prince's "friends." At twenty-one he inherited 20,000*l.* a year, and he spent it. One night he went to the theatre in a specially built vehicle, that he called Punch's Coach, which caused a commotion, and next played as the Merry Mourners: a man went on all fours with a coffin on his back, which he stood at a street-door and knocked. Upon the door being opened the coffin fell on the person inside. There were three brother Barrymores,—the first we have quoted, the second was called Newgate, and the third Cripplegate, and their nicknames tell pretty plainly their doings. They kept the Prince company in all his frolics, and as money was pretty freely spent, Brighton did not complain.

The Prince went to Brighton for the first time on the 7th of September, 1783. His next visit was in July following, when he reached the place between three and four in the morning. On the 25th he rode on horseback to London and back in ten hours! Next year he attempted to shoot doves with single balls, and brought down the chimneys of the Hon. Mr. Windham's house. He then wagered for a "nominal" 500*l.*, but which ended in a loss of "a few thousands," with the vagabond Major Hanger, a ten-mile race between twenty turkeys and twenty geese. The Prince started with his party of turkeys, who, like the hare, set off at a pace, but night coming on, they took to the trees, and the Prince could not dislodge them, so the geese, which kept quietly waddling on, won the race.

In 1788, the Prince had taken a lease, for twenty-one years, of the house he had occupied since 1784, entitled "the messuage or tenement, &c., situate in the east part of East-street," with the furniture in it, at 150*l.* a year. This house he purchased soon after for 3,000*l.*,—in the name of Louis Weltjie, the clerk of his kitchen (he died at Chiswick in 1800), who re-conveyed it to him. And the house, with other buildings and land adjoining, purchased from time to time, formed the site of the present magnificent Pavilion. In that entertaining and valuable little work, "The Brighton Pavilion and its Royal Associations," is given such a remarkable series of events in connexion with the building, extending over some forty years of the Prince's career, that it is to that work alone its history must be looked for. Suffice it to say, that the different purchases of the site down to 1823 had cost within 400*l.* of 60,000*l.* What had been spent upon the erection of the building, stables, fittings, &c., it is impossible to tell (to May, 1816, something like 50,000*l.* had been spent on furniture alone),—and yet in 1850 the town obtained the property from the Crown for 53,000*l.*, and at the time, too, when Messrs. Cubitt, the builders, were ready to pay 100,000*l.* The inhabitants paid the money to the Royal Commissioners on the 13th, and took possession on the 19th of June, and a grand day was that for Brighton.

In 1779 the post-bags left Brighton at nine a.m., and reached London in the evening at seven o'clock, except Saturday. In winter, letters were sent to London four days a week, but Brighton only received theirs on Thursday and Saturday! Each letter, until 1840, was charged 8d., and even after the Royal Mail had been put on the road in 1807, the old price was continued. In 1811 the Government paid for a brace of pistols for the guard in charge of it, so great were the dangers in travelling. In 1840, about 5,000 letters were delivered a week; and in one week thirty years later, the delivery was:—Letters, 105,685; newspapers, 7,743; cards, 6,667; and in October, 1876, the weekly delivery was 222,370 all told!

In the midst of all its progress smuggling at Brighton was in its prime. Many were the attempts at "doing" the revenue. In 1776 a chaise was brought over from Dieppe, and 1,000*l.* worth of lace was found stuffed in its cushions, and a Frenchman was detected on the

Steine selling loaves stuffed with lace! (Bishop). In his interesting "Glimpses of Our Ancestors in Sussex," Mr. Fleet tells us:—"The vicar of a country parish not far from Brighton wanted to visit his church rather earlier than usual one Sunday morning, and was met by all kinds of excuses and obstructions from the sexton for not finding the key, until at last it came out that the sacred edifice was full of kegs of brandy! And they had to be cleared out before service could be proceeded with." One of the last smuggling battles was fought near Bexhill, in Sussex, in 1828. It was a regular engagement, and one of the smugglers was shot dead. Even in 1835 some forty or fifty men attempted to run "a crop of goods" near Hove turnpike-gate, but the coastguard was too powerful for them.

The earliest horse-racing in Brighton was in 1770, but there were other races afterwards; for instance, Hanger got up one between five girls for a smock, much to the Prince's delight. In 1784 Sir Thomas Bunbury bet twenty guineas that a French nobleman would not run backbards half a mile along the Steine in less time than the waiter at the Castle Hotel. The waiter won.

On October 27th, 1788, says Mr. Bishop, "Earl Barrymore's brother (Cripplegate) rode a horse up the stairs to the topmost room of Mrs. Fitzherbert's house. The horse could not be induced to make the return journey, and two blacksmiths were at last called in to get the animal down by main force,—the reward for their pains being a bowl of punch at the Castle."

The first coffee-house was opened in connexion with the Old Ship Inn, in 1765, but the second was not started until twenty years later, and, in 1789, enterprise furnished Brighton with a bank. This was a progress indeed, for the population was between 3,000 and 4,000 all told; and, in 1784, the house assessment was only 2,304*l*. Yet this was something, seeing that the town a score years earlier had been called "an excellent nursery for mariners," and that while the men were wholly employed in fishing, the women made the nets!

When the small-pox ravaged the place, in 1786, the vestry ordered a general inoculation of the 1,887 persons who escaped the disease.

The earliest newspaper in connexion with the name of the town was the *Lewes and Brighthelmston Pacquet*, started in Lewes in 1789. It only existed, however, for half a year, and contained little about Brighton. The first real Brighton news-sheet was the still existing and prosperous *Brighton Herald*, which "opened shop" in September, 1806, and the leading articles for which had to be sent across country by messenger on horseback. Readers of our journal little know what our predecessors had to endure in order to supply the public with news. The *Herald* was sold at 6d. a copy, out of which the Government took 3½d. for stamps, and this was actually increased to 4d. in 1815. Every advertisement paid 3*s*. 6d. (think of that, every advertiser of to-day!) and there was a heavy tax upon the paper itself, so it is not to be wondered at that the national progress in knowledge was very slow. The first newsman was the parish sexton, and he started off every Saturday with the paper to the neighbouring towns. And yet through all its troubles this little Brighton paper did good service. It was the first paper that told to an English public the Battle of Vittoria, the death of the favourite daughter of George III., the Proclamation of Napoleon to the French upon escaping from Elba, the French Revolution of 1830, and the arrival of Louis Philippe as a fugitive to these shores, in 1848. There are but few local journals of a past age that can say as much, and it surprises us, when we think of it, to know these facts, and yet are unable to tell how the facts were achieved. Even the great London *Times* has been indebted to this local journal more than once when locomotion was in its infancy, and the telegraph and telephone were unknown. As Brighton increased fresh newspapers started, until it is now better represented than many other places twice its size.

Among all the curiosities of local government in the good old times, none show the want of humanity more than the treatment of beggars. Whipping dogs out of church was no less popular than whipping beggars out of a town. So late as 1819, the parish beadle was ordered to whip three vagrants "until their backs were bloody," and (says "A Peep into the Past") "the sentence was put into execution the next day." And so long back as James I.'s reign the same order is to be met with, and a poor mendicant was so whipped from town to town until the one he belonged to claimed him!

As we have stated, the progress of Brighton has been of recent years so rapid, that it is needless for us to say further than instance the value of ground in the now well-known King's-road. In 1819, the old Watchhouse was let to the Government for thirty years at eight guineas a year. Four years later it was purchased for 530*l*., and became the old Custom-house. Another house was sold for 150*l*. at the same time, which, a few years later, let at 75*l*. a year, and but a few years since was again sold for 2,300*l*.

The Brighton Spa was long a favourite mineral water. It was first discovered some 150 years ago, and was considered by some better than that at Tunbridge. Its virtues were proclaimed as giving an appetite, reviving spirits, and adding strength. But the people that flocked to it caused provisions to rise. In 1771, mutton and veal had risen to 4½d. per lb., beef and lamb, 5d.; and fresh butter, 8d.; mackerel, 2d. each. We are not told what the prices were before, but perhaps that is as well. The thoughts of such prices to us now make us all the more realise the fact that old Brighton is old Brighthelmstone no longer, and that, if royalty helped to make it when George III. was king, it is now in full possession of those qualities which it would do well for other watering-places to imitate, and which has raised a small fishing village of a few hundred inhabitants when Queen Anne was our sovereign, to the "still-increasing" town with its 100,000 persons in this the latter half of the nineteenth century.

THE APSE, RATISBON CATHEDRAL.

WE have more than once, in writing upon Cologne Cathedral, made reference to the Cathedral of Ratisbon, and have expressed an opinion that the latter church exhibits more of the national German characteristics as to style than does the former. As we pointed out upon a recent occasion, a comparison between the apses of the two churches will show what we mean in a very marked manner. It should be borne in mind that Ratisbon is a much smaller church than Cologne, though taking a section through the choir we shall not find the difference so great as might be supposed. The width of the nave of Ratisbon is rather greater than that of Cologne, but the height is considerably less. Ratisbon is 118 ft. to the crown of the vault, and Cologne is 145 ft.; in fact, Ratisbon is little more than two squares high, but Cologne is more than three. The proportion of the triforium to the whole height is far greater at Ratisbon than at Cologne, and of the clearstory far less. The general disposition of the apse is far simpler at Ratisbon than at Cologne. There are no chevet or radiating chapels, yet the treatment is very picturesque and the proportions are less exaggerated and more pleasing than those of the larger cathedral.

The details are thoroughly German in style, and quite unlike French work. There is, moreover, a sobriety and quietness about the design not only of the apse at Ratisbon, but about the whole interior, which probably help, in a great measure, to produce that impression of solemnity which is so marked a feature of this church. There are, of course, other elements which assist in making this impression upon the mind; for instance, the charming warm tint of the stone, which has never been whitewashed or coloured over; the fine old stained glass, the absence of tawdry decorations,—for although the high altar is of a bad period of art, yet its design is thoroughly inoffensive, and as it is composed entirely of silver, which has become slightly tarnished by time, it is rich and beautiful in colour. During a considerable part of the year, this altar is covered with wooden panels painted white and gold, when its effect is decidedly unsatisfactory. The old "Sacraments-house" exists, and is a good example of a tabernacle, though not to be compared with that in St. Sebald's, at Nuremberg. The stalls are contemporary with the high altar. They are very plain, with simple but fairly good panelling at the back. A low iron grille separates the choir from the nave; it is rather a pretty piece of fifteenth-century iron-work, though very plain and simple. The pulpit is a good example of late fifteenth-century work, with a very elaborate metal railing to the stairs leading up to it.

The side altars have been previously described in this journal. They include most remarkable examples of fourteenth and fifteenth century baldacchinos. The old canopied well has also been described on a former occasion, and also the monuments. The only discordant elements in this most striking interior are two or three modern Gothic reredoses and two new stained-glass windows. These, however, are less obtrusive than such additions often are, and when the choir, for which this cathedral is justly celebrated all over Europe, is singing the noble musical compositions of the sixteenth century, with their grand and solemn harmonies, one is quite taken back to the Middle Ages. It is strange how wonderfully the strains of Palestrina and his school seem to combine with the architecture of an old cathedral, and to become part of it, while the kind of music one generally hears in Continental cathedrals, with its fiddles, drums, and operatic airs, seems to shock one's sense of the solemnity of the place. Do not let any of our musical readers suppose that we wish to decry the use of instrumental accompaniments in churches. We simply say that what is called the "vocal style" of church music seems to combine itself with the architecture of an ancient Gothic church in a way which no other music does.

WALL PAPER: "GRAPE."

THIS design for wall paper repeats in 3 ft. 1 in. by 1 ft. 9 in., and drops half in the hanging. This unusual length necessitates two sets of blocks 1 ft. 6½ in. by 1 ft. 9 in., which were rendered necessary by the *growth* being constructed upon its present principle. Although adapted for many ways of production, it works complete as a single colour, as shown in our lithograph.

It has been made as a two-colour and as a three-colour paper. We have seen it, too, in a new description of flock. This flock, called "cheviot," is composed of hair of various lengths instead of wool of one uniform and monotonous level. It has a beautiful soft, rich quality, like old velvets, and the superiority of its appearance from an artistic point of view is obvious. It is worked with the foliage and stems in deep "old" gold, and the grapes in a brighter gold, slightly burnished.

The design was made by Mr. Geo. C. Haite for Messrs. W. Woollams & Co.

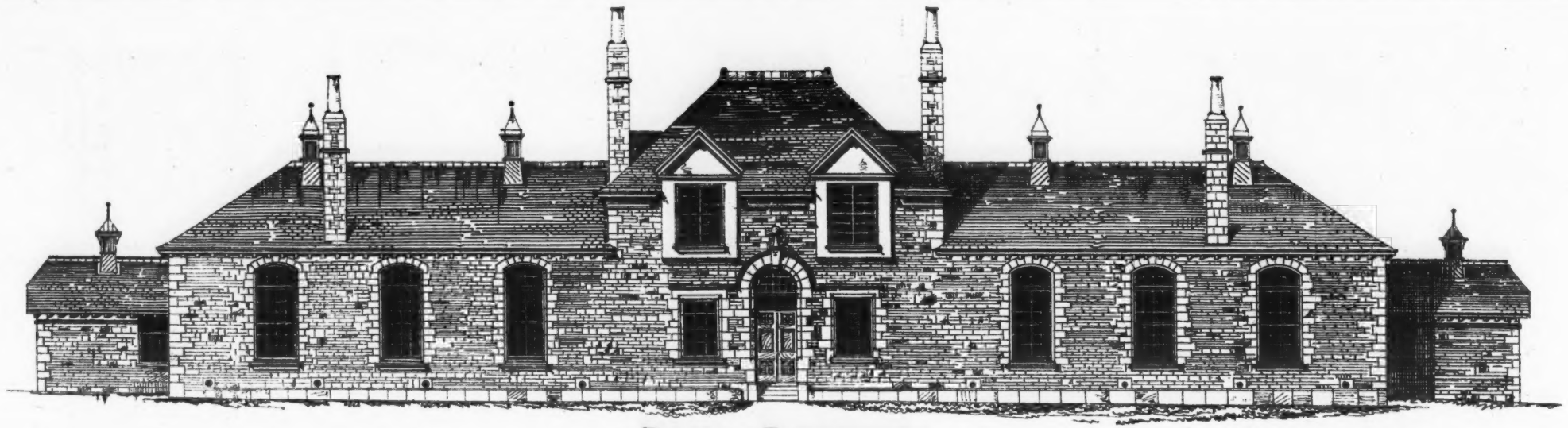
THE ORATORY OF HENRY V.: WESTMINSTER ABBEY.

DECIDEDLY one of the most interesting memorials in the abbey church of Westminster is that erected over the burial-place of King Henry V. This oratory, or shrine, although ingeniously planned and completed, cannot be compared with the wonderful edifice adjoining it, the chapel of Henry VII., this, for extent and magnificence being beyond competition; but, taking into consideration the condition of the State coffers after the ruinous wars that had engaged the Plantagenet kings for years previously to the victory at Agincourt, and after a lavish expenditure at the funeral of the conqueror (said to be the most costly and imposing on record), it is surprising that the means should have been forthcoming to erect such a splendid monument as this once must have been.

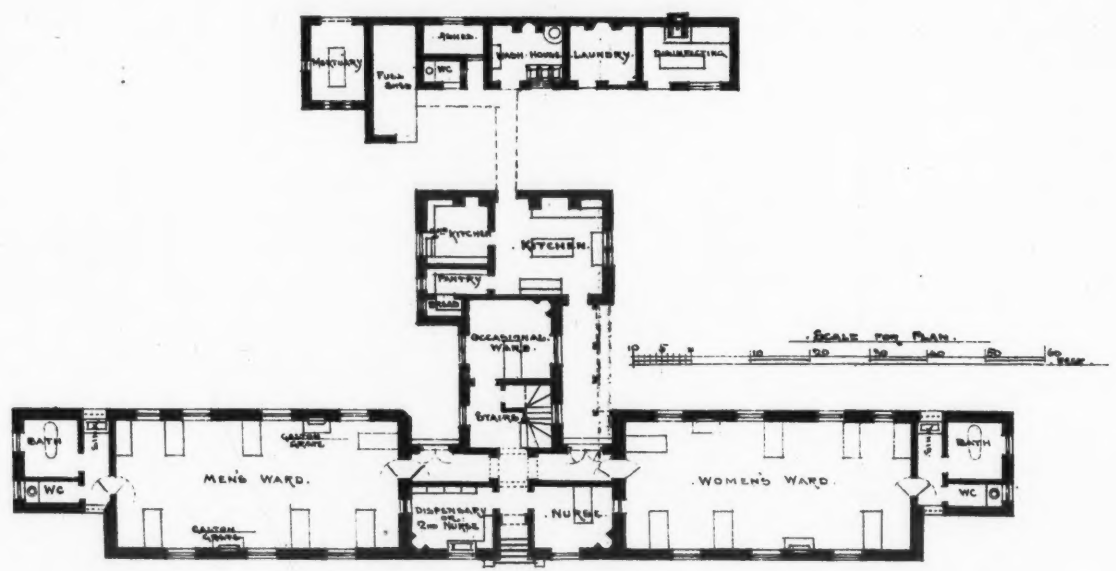
Up to the time of the erection of this oratory no monument in the Abbey was equal to it in importance, those preceding it chiefly consisting of an altar-tomb, surmounted with a canopy, that of Edward III. and others being placed between and supported by the columns in the choir, enclosing the chapel of Edward the Confessor, or "Chapel of the Kings," as it has been sometimes called.

It would appear, therefore, that the selection of the easternmost bay of the choir immediately in front of the lady-chapel as a position for this regal tomb, extending as it does into the ambulatory, and considerably narrowing its limits, is highly significant of the veneration and love in which the Warrior King was held by his people; and the effect of the traceried turrets containing the stairs leading to the oratory,—the supporting vault delicately ribbed and rich with sculptured badges of the king,—and, lastly, the tomb itself, with its recumbent silver effigy, must have struck the eye of the beholder at the time of completion as a most sumptuous burial-place, surpassing all others surrounding it.

The Chapel of St. Mary, or Lady-chapel, taken



FRONT ELEVATION.
(SOUTH.)

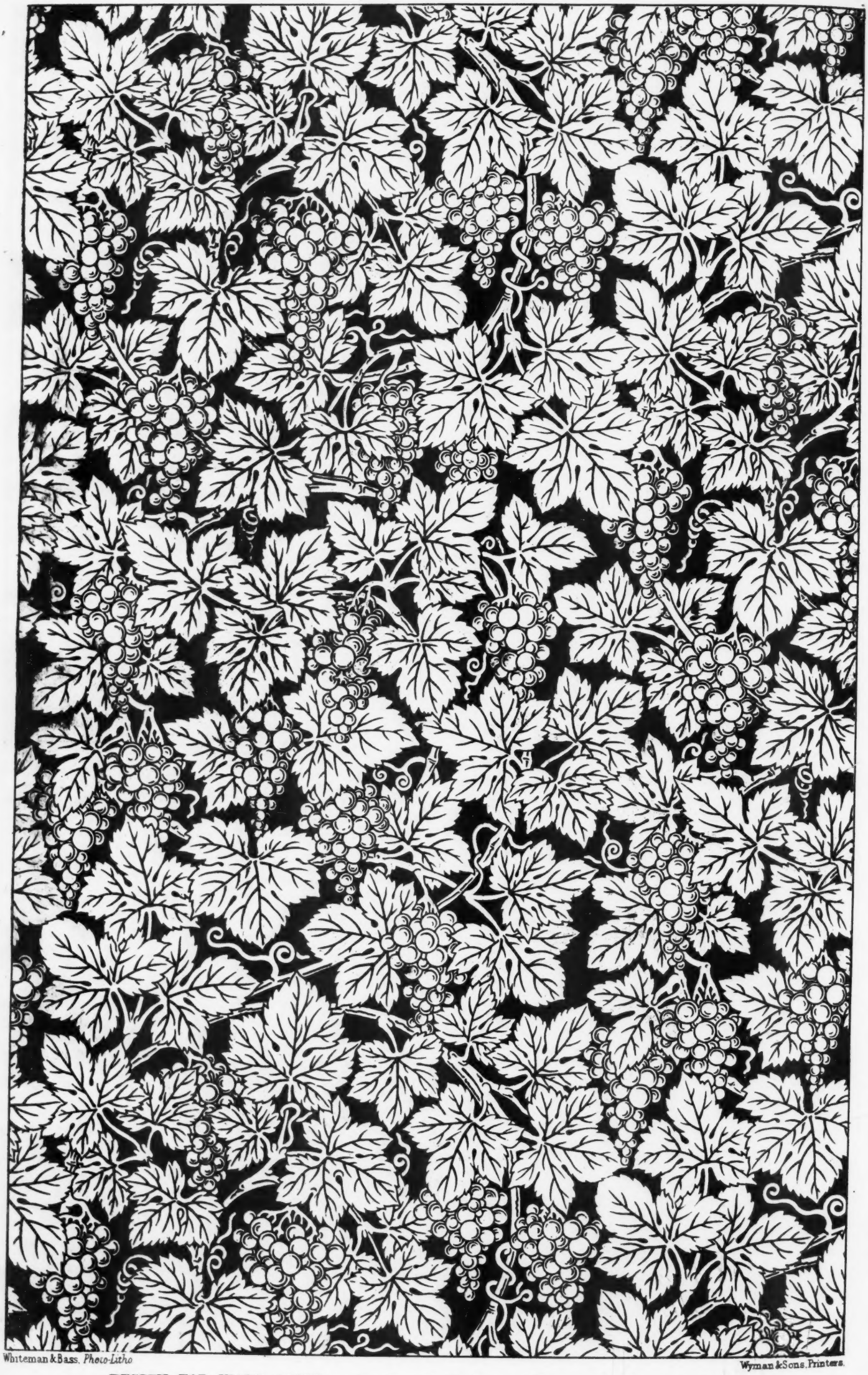


GROUND PLAN. ON UPPER FLOOR, CONVALESCENTS WARDS. SERVANTS ROOMS. STORES &c &c.

Whiteman & Bass, Photo-Litho 236 High Holborn.

Wyman & Sons, Printers, G^t Queen S^t

INFECTIOUS DISEASES HOSPITAL, KENDAL.—MR. D. BRADE, ARCHITECT.



Whiteman & Bass. *Photo-Litho*

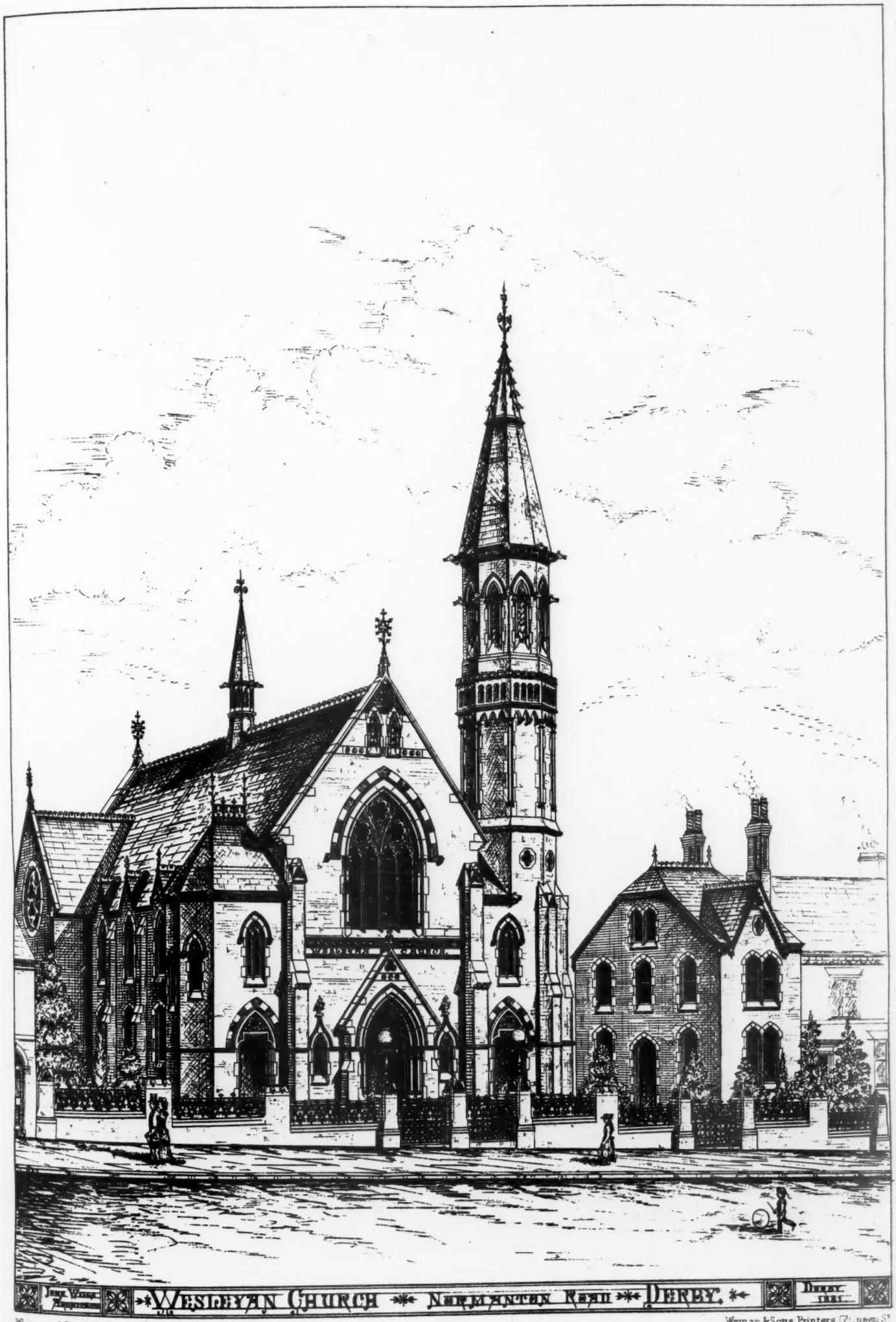
Wyman & Sons, Printers.

DESIGN FOR WALL PAPER.——By Geo. C. Haite, for Messrs. W. Woollams & Co.

[Registered for wall papers and fabrics.]

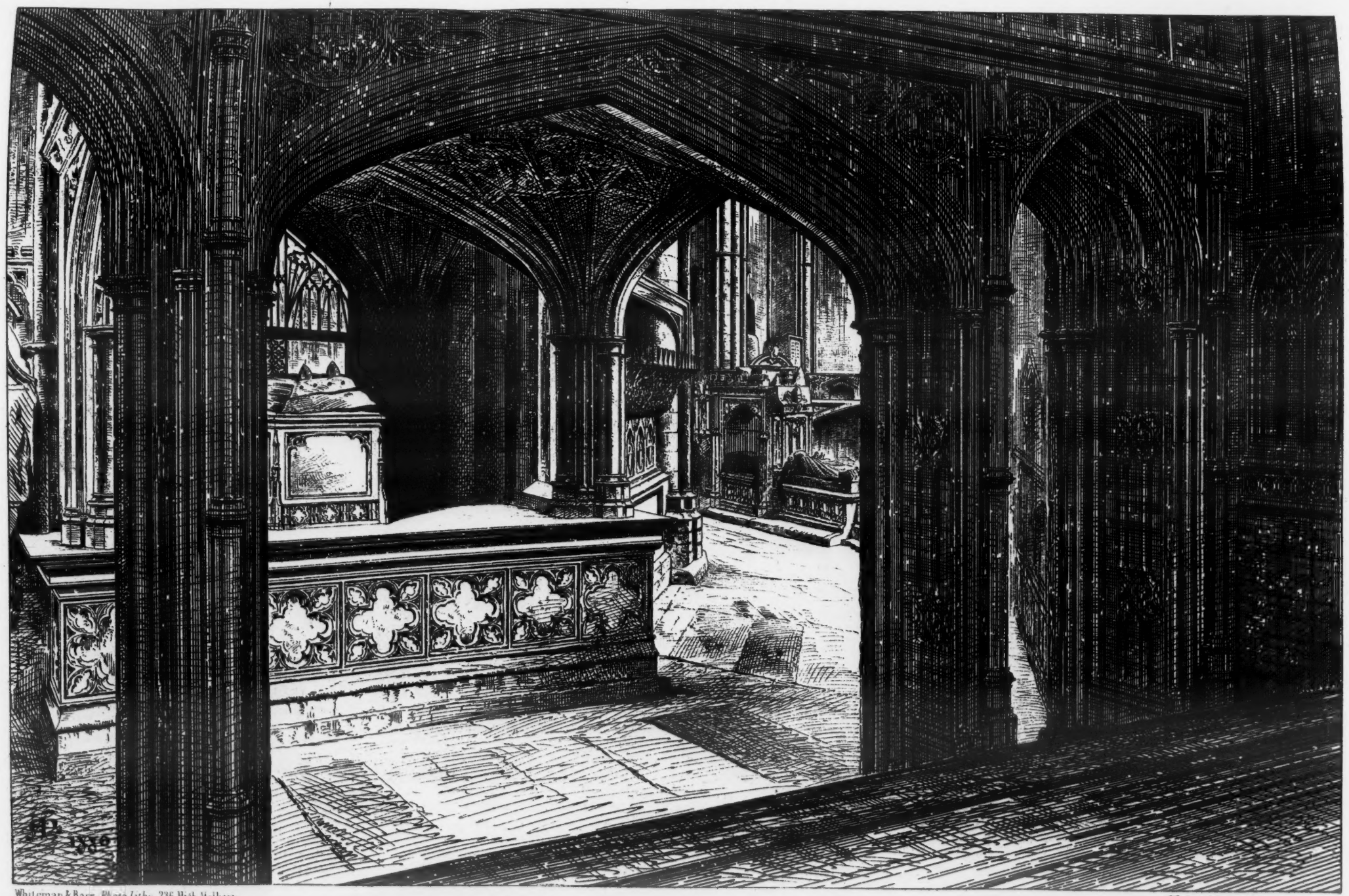
THE APSE, RATISBON CATHEDRAL.

OFFICES OF THE TOWN CREDIT WARSAW.—MR. ANKIEWICZ, ARCHITECT.



Whiteman & Bass. *Photo-Litho* 236. High Holborn

Wyman & Sons, Printers, 74 Queen St



Whiteman & Bass, *Photo-litho*, 236 High Holborn.

TOMB AND ORATORY OF KING HENRY V.—EAST END OF CHOIR, WESTMINSTER ABBEY.

Wyman & Sons, Printers, Great Queen St.

down by Henry VII. to form the vestibule or entrance to his own chapel, being similar in form to the four contiguous chapels of SS. Paul, John the Baptist, Nicholas, and Edmund, the erection of the oratory of Henry V. interfered to a considerable degree with the appearance of the choir ambulatory by obtrusively crossing it at the supreme point of interest in the Abbey, shutting off a fine perspective from the north to the south and *vice versâ*, and no doubt this was felt to be a defect at the time of its erection by the designer of the oratory (perhaps acting under pressure) as he has evidently endeavoured to compensate for the loss of effect by filling in the sides of the oratory above the arches spanning the aisles in a very elaborate manner, with sculptured figures in niches and rich tabernacle work, all very beautiful *per se*, but undoubtedly doing permanent injury to one of the most charming portions of the Abbey.

The accompanying illustration, from a water-colour drawing made on the spot, more particularly exhibits the east end of the altar, the vaulting beneath the oratory, and the gate that opens into the Confessor's Chapel seen beyond. Taken from a point in the vestibule of Henry VII. above the steps leading into the chapel, it forms one of the most interesting and picturesque "bits" in the Abbey.

Sketching just here, however, is attended with much difficulty, as the numerous visitors (ever anxious to see the resting-places of Queen Elizabeth and Mary Stuart) are apt to get in the artist's way. Moreover, this spot is nearly always in darkness, the only direct light being admitted through the perforations of two compartments on the north and south sides of the vestibule, clear of the Abbey walls, and above the doors leading to the aisles of Henry VII.'s Chapel.

During a very brief portion of the day, however, when the sun's rays penetrate the southern window, sketching can be pursued with comparative ease, but the artist must make the most of his time. It is at this period the exquisite vestibule or ante-chapel may be seen to advantage, and its richly-panelled vaulting and walls, and exquisite carving, are fully revealed, the changing effects of light and shadow enhancing the beauty of the design.

The masonry of the entrance to this vestibule is incorporated with that of the oratory of Henry V. in a very ingenious manner, resulting in a harmonious blending of the two different epochs. There are, however, traces of incompletion, a few small shafts being omitted, and the angles of the piers supporting the three arches are left rough in some parts, as if there was a doubt of sufficient stability for the superimposed weight had they been properly moulded and finished.

The tomb or sarcophagus of the king is so feeble in design, reminding one of "Batty Langley," that it is improbable it originally had this form entirely, but that it has been altered and restored. The quatrefoils and panelling introduced at the base are the best portion of the work.

The surbase extends considerably beyond the sarcophagus, and receives the shafts that support the vaulting under the oratory. The sides are filled in with quatrefoil panelling of good design, although much injured. The cornice projects boldly; the base mouldings are flat, and seem to have been designed to obtrude as little as possible into the aisle.

The adjoining tomb to the right in the view is that of Eleanor, wife of Edward I. The exquisite figure, which has recently been cleaned and restored in a successful manner, is hidden by the heavy wrought-iron grille fixed above the tomb, and which detracts considerably from its appearance; although it is a good specimen of early smith's work, and is said to have originally belonged to it.

The wooden canopy surmounting this tomb (like that of Henry III.), whilst innocently devoid of the remotest approach to beauty of form, is really in the way of a good view of the unique triforium, as seen from the north aisle of the choir; it appears to be of a late date, temporary in character.

The illustration also shows the recumbent figure in stone, much mutilated, of Abbot O'Ruthall, 1524. The adjoining tomb, with vaulted canopy, battlement-crested, is that of Abbot Fascet, 1500. Thos. Millyng, bishop of Hereford, 1492, also lies here. His monument is disfigured by the modern iron bars and transom filling up the front. It is well proportioned, and, with that of Bishop O'Ruthall, is richly panelled and sculptured. Amongst the various minute accounts that may be consulted on the history of the Abbey and its monuments, one of the most interesting and exhaustive is the well-known "Historical Memorials" of Westminster Abbey, by Arthur Penrhyn Stanley, D.D., Dean of Westminster.

E. A. HEFFER.

INFECTIOUS DISEASES HOSPITAL, KENDAL.

THE accompanying drawings illustrate the selected design for the above, as proposed to be erected on the Kendal Fells by the Corporation Urban Sanitary Authority. The design generally explains the arrangement, and the upper story, not shown, would accommodate male and female convalescents and servants' bedrooms, and bedding and hospital stores. The kitchen, though attached to the building, has no communication therewith on either story, and would have access only by the covered way.

The hospital main front will have a south-easterly aspect, and is to be built in local limestone, with freestone dressings. The roofs will be slated with green Westmoreland slates. The inner walls of all wards and passages will be plastered in Keene's cement, and painted two coats with silicate paint. There will be double doors to all wards and lavatories, with glazed panels for inspection. Cubic space of 2,200 ft. is provided for each patient.

The wards are to have two of Galton's grates in each, on opposite sides, and to be ventilated by two large exhaust air-pump ventilators in the ceilings, fresh air being admitted by vertical tubes from outside, discharging about 7 ft. 6 in. from the floor. The ward windows are ordinary sash windows, but the top compartments will open as swing sashes. Baths, movable on wheels, will be provided. The architect is Mr. D. Brade, Times Chambers, Kendal.

PUBLIC HALL AND BATHS AT STREATHAM.

THE parish of Streatham is likely, in a short time, to be exceptionally well off for public baths, and other sources of health, recreation, and entertainment. A body, designated the County Club and Baths Company, has recently been formed, the objects of the company being the establishment of clubs in certain localities, including the erection of public and lecture halls and baths, together with other buildings for recreation and entertainment purposes, and Streatham has been selected as the first locality where the company intend to commence operations. The club is to consist of two classes,—first-class members and working-class members,—the entrance-fees and annual and weekly subscriptions being so arranged as to meet the means and requirements of each. The promoters of the company, amongst whom are included several gentlemen of influence in Streatham and the locality, state in their prospectus that as four railway stations, omnibuses, and other facilities, afford ample means of access, they are induced to erect their first buildings in that locality, believing that the present population of upwards of 20,000, together with the residents in the districts of Mitcham, Tooting, Norwood, and Sydenham, rapidly increasing by active building operations in progress, will avail themselves of the advantages to be offered by the erection of the different new club buildings. The company have already secured an eligible site in the locality, on which it is proposed to erect a block of buildings, which shall include a public and lecture hall, to be so constructed as to meet the requirements of a Mechanics' Institute, private theatricals, concerts, lectures, bazaars, and public and private meetings. Swimming and hot and cold baths, refreshment-rooms, and ground for athletic sports, likewise form portions of the undertaking.

In addition to these prospective advantages to the inhabitants, the vestry have unanimously resolved to adopt the Baths and Washhouses Act in Streatham, which means the establishment of parochial baths and washhouses, to be erected and subsidised out of the rates, and we are informed that the vestry are negotiating for a site for the proposed baths in a locality where residences for the middle and industrial classes have lately been erected to a large extent.

WESLEYAN CHURCH, DERBY.

THIS church is to be erected during the ensuing summer on the Normanton-road, at the part known as Rose Hill. The mission-room now in use at the rear of the site will be used for Sunday-school purposes, and new class-rooms will be added. The church will be built of brick, stone being freely used for windows, doorways, and the usual weatherings. The front will have a well-moulded central doorway, with shafts of polished granite and foliated capitals, over which there will be a four-light window, with the head filled in with Geometrical tracery. This will be flanked with staircases leading to galleries, having an octagonal outline, that on the right being continued so as to form a tower in three stages, each upper stage being relieved with elaborate details, the total height being about 100 ft. At the other end of the church there will be transepts; and at the rear of the rostrum there will be an orchestra with a circular window filled in with Transitional tracery. The organ-chamber is at the side of the orchestra, and the front only of the instrument will be seen. All the glazing will be in quarries of cathedral-glass with margins, and it is anticipated that the front and orchestra windows will be filled in with designs, being the gifts of individuals interested in the cause. The church will seat nearly 800 adults, and will cost 3,000*l.*, but an additional 500*l.* will be expended on the new class-rooms. Towards this expenditure the Mayor of Derby, Mr. Abraham Woodiwiss, has generously given 300*l.* The house shown on the right-hand side is to be the chapel-keeper's lodge, but its erection has not yet been decided on by the trustees. The architect is Mr. Councillor John Wills, of Derby, whose design has been accepted without competition.

OFFICES OF THE TOWN CREDIT SOCIETY, WARSAW.

THIS building, of which we give a view, has been erected on the Vladimir-street, from the design and under the supervision of Mr. Ankiewicz, architect. It is entitled, without doubt, both on account of its architectural features and the manner in which it is carried out, to rank amongst the finest edifices of Warsaw. From our illustration, it is easy to understand the prominence of the exterior, which is ornamented with fine allegorical statues sculptured in stone by several well-known Polish sculptors. As regards the interior arrangements, if we are to be guided by statements which come to us from the spot, it fully answers all requirements of such an office. With respect to the ornamentation of the interior, it is noteworthy that this includes several fine frescoes, executed by Mr. Wojciech Gerson (who has painted the elaborate ceiling of the board-room) and Mr. J. Strzalecki.

LIFTS FOR WAREHOUSES.*

WHERE factories or warehouses have need of means to raise and lower goods, it is evident that, with large business operations, something more complete is required than a mere winch or pulley for lifting a few feet only. A lift of some sort is erected in most modern warehouses, connecting the different floors, and worked either by hand or by steam or water power. Whatever form of lift is adopted, it is obvious that it should be accessible at every floor, easily stopped and started at any level, completely under control, whether ascending or descending, and quite safe in its working when loaded within the limits for which it was constructed. The most usual form of lift is that worked by hand, in cases where the load to be raised does not much exceed half a ton. This consists of a cage, 4 ft. to 5 ft. square, according to circumstances, suspended by a rope or chain, passing over a drum or pulley at the top of the building. The cage is attached to a balance-weight, which should just balance the weight of the cage when unloaded. It travels between timber guides the whole height of the lift, and is raised by means of a continuous hand-rope carried through all the floors of the building, and so placed that it can be worked at every floor. This hand-rope passes round a large-grooved wheel at the top, on a counter-shaft, which is geared to the main shaft directly over the lift, and the cage is raised by the friction of the hand-rope on the grooved

* By Mr. Geo. C. Child. Read at a meeting of the Civil and Mechanical Engineers' Society.

wheel. The lowering of the cage is effected by the weight of the load, assisted at starting, when the load is a light one, by hauling the continuous hand-rope. For stopping the cage at any floor, and to prevent it descending beyond a safe speed, there is a brake-drum keyed to the main or counter shaft,—the brake block or strap being actuated by a chain passing down the building. To prevent the cage falling to the bottom of the building, should the main rope break, safety-catches, attached above or below the cage, are forced by springs far enough into the timber guides to support the cage and its load. The springs are prevented from exerting their force on the safety-catches, when the lift is in working order, by tension on the main rope.

The load suitable for a hand-lift should not far exceed half a ton, so that one man hauling at the hand-rope may work the cage at a fair speed. When heavier loads have to be raised, more than one man may be required to work the hand-rope, or additional gearing is wanted, reducing the rate of travel of the cage, and unless there are means provided for putting on the extra gear for heavy weights, much time is unnecessarily lost in raising the light loads. For loads exceeding half a ton, it therefore is desirable to employ power to work a lift, and in a warehouse where steam power is required for other purposes, a lift may be worked off an engine direct, or off a line of shafting, with very little expenditure of power. A lift capable of raising a ton, at a speed of, say, 60 ft. per minute, requires about five horse-power to work it, and in many cases this additional power may be obtained from the existing steam-engines without seriously reducing their efficiency for the other operations in a warehouse.

A few years ago, owing to a failure of the main rope of a hand-lift, the cage fell from the top to the bottom of the warehouse, a height of 50 ft., killing one man and injuring another. The main rope of the lift was wound round a drum at the top of the building, there being no balance-weight, so that the weight of the cage, in addition to the load, had to be lifted each time the goods were raised. The absence of a balance-weight, too, was felt in lowering a heavy load; for it was sometimes more than the brake could do to bring the cage to rest at any required floor. No safety-catches had been provided to stop the cage in its downward career when the main rope broke. The lift was worked by a continuous hand-rope in the usual manner. The brake was a lever, with a weight at one end and a brake-block at the other, pressing against a drum when the brake-chain was disengaged.

It was determined to substitute lifts worked by steam-power, in the place of the one which broke down, and of others of similar construction. In the arrangement of the new power lifts, many defects existing in the old hand-lifts were avoided. The cage of each lift was supported by two 5 in. (1¾ in. diam.) ropes, instead of one 4 in. as in the old lifts, one rope being capable of supporting the loaded cage, in case the other rope should give way. This necessitated the duplication of the rope pulleys throughout, but the additional safety given by the second rope was held to be well worth the extra expense. The main ropes passed from the cage over pulleys above the lift, and were brought down the building to the basement, where the machinery, driven by a steam-engine, was situated. The ropes were carried up again to the top of the building, and over pulleys, to support the balance-weight, which nearly equalled the weight of the cage. Had circumstances permitted, the length of rope running down to the basement and up again to the pulleys over the balance-weight could have been saved, by placing the driving gear at the top of the lift. The heaviest loads to be raised in bulk by these lifts were hogsheads of sugar, weighing about a ton, and the cages were made 5 ft. square to receive these. In the case of one lift there were openings on three sides, at different floors, so that, while making the cage with open sides, it was necessary, to avoid rocking, to give stiffness without the use of diagonal bracing. The timber floor of the cage was bolted to a strong square angle iron frame, welded up, and at each of the corners were fixed stout wrought-iron stanchions, 6 ft. 6 in. high, connected at the top by a wrought-iron cross, to which was attached the coupling for the ropes. The whole of the iron work of the cage was riveted up, to prevent distortion by the unequal distribution of the load. The cage was guided by four pulleys at the top, and four at the bottom corners, with V edges running in Tee-iron guides, bolted to timber plates fixed to the walls of the building. The timber plates were sufficiently broad to allow the safety-catches to clear the flanges of the Tee-irons. A chain, fixed to the main ropes by clips, led down to the safety-catches under the floor of the cage, and was adjusted to prevent the catches acting until the main ropes should break. The main ropes were attached to a plate at the top of the cage, capable of adjusting any slight unequal stretching of the ropes.

The cage was started and stopped at any floor by a hand-rope connected with the strap gear of the driving machinery in the basement. A projecting catch was fixed at the top and bottom of the hand-rope, so that the cage could bring itself to rest at the top or bottom limit of its travel, by shifting the driving-belts on to loose pulleys. Thus no accident could occur from the over-running of the cage through want of attention on the part of the man working the lift. It must be observed that these lifts were essentially for the purpose of raising goods, and were not intended for passenger-lifts. By bringing the hand-rope through the cage, it could have been stopped and started by an attendant constantly stationed in the cage itself; but after the accident which occurred to the old hand-lift, it was deemed advisable to permit no one to ride in the cage. The machinery in the basement was driven off a line of shafting, running at sixty revolutions per minute. There were two belts, one crossed, for raising the load, and the other open, for lowering it; so that the lift was never independent of the engine. The belt pulleys were 4 ft. diameter; the fast pulleys 5 in. wide, and the loose ones 10 in. wide, to allow either belt to run loose, while the other one was driving; or, when the cage was standing, to allow both belts to run on the loose pulleys. The lever for shifting the belts was attached to the hand-rope, and by pulling this up (when it was required to raise a load) or by pulling it down (when the cage was to descend) the belt lever was raised or depressed, shifting either belt on to its fast pulley, as required. When it was desired to bring the cage to rest, the hand-rope was brought to its mid-position, and both belts were at once shifted to the loose pulleys. At the same moment a brake came into operation, powerful enough to sustain the cage at any level with a heavier load than was likely to be placed upon it. The actual driving of the lifts was effected by the friction of the ropes in the grooved roped pulleys, worked off the belt pulley shaft by gearing, arranged to give a rate of travel of 1 ft. per second to the cage. All the rope pulleys were 4 ft. diameter, which allowed the ropes to run easily round them without any undue straining of the fibres, which might occur with ropes of about 1¾ in. diameter running on pulleys of smaller size. Without claiming any novelty in the arrangement of these lifts, I would observe that they worked satisfactorily, and that the utmost reliance could be placed on their safety.

Chains, or wire ropes, are preferred by some to hemp ropes, and power-lifts are frequently constructed without balance-weights, the chain or rope being wound on a drum when the cage is raised, and by allowing it to descend by its own weight, plus the load. In confined places this is convenient, as no space is required for the balance-weight, which must have the same travel as the cage. But it must be remembered that when the balance-weight is not employed, the weight of the cage, which in a large lift is considerable, must be added to the load to be raised. And in the descent of the cage and its load, the safety of the lift depends entirely upon the proper working of the brake. Some arrangement is required for supporting the cage when brought to rest at any floor, so that men may take off the load without risk of the cage running down while they are in the lift.

Water power is frequently used to work lifts of similar construction to those just mentioned, by means of chains multiplying the motion of the ram. Where water power is used for other purposes, this is an economical and efficient method of applying power to lifts. In some districts, water is supplied in the mains at a considerable pressure, say 150 ft. head; with a supply-pipe of requisite size, a hydraulic piston or ram could be worked directly off the main, without needing a steam-engine for raising pressure of water sufficient for a lift. But much higher pressure is used, as a rule, for hydraulic lifts, requiring a steam engine for pumping the water to the necessary head, and an accumulator, which acts as a reservoir of the power given out by the steam-engine in charging it. I need hardly remark that the accumulator consists of a cylinder and ram of large size, the ram being loaded to give the required pressure for working the hydraulic lift. It regulates the speed of the engine, by partially closing a throttle-valve on the steam-pipe, when the plunger is near the top of its stroke. When the working of the lift causes the plunger of the accumulator to descend, the throttle-valve is opened to give an increased production of power. In the hydraulic lift the cage is not suspended by chains or ropes, as in the lifts already described, but is placed on the head of the piston or plunger, which is the entire length of the lift, and working in a cylinder sunk into the earth. Weights are employed to balance the weight of the cage and ram. Lifts of this construction may certainly be regarded as the safest that can be used, and they are usually adopted in places where passengers are to be raised from floor to floor. Whatever risk there may be in the use of a lift in which the cage is hung from a rope or chain, is avoided in the hydraulic lift, in which the cage is attached to the top of the plunger. This is not likely to descend beyond a safe speed, for, even if a valve should break or a leak occur in any of the connexions, the water will not escape from the cylinder fast enough to permit the plunger falling suddenly.

I may mention that in a hydraulic lift intended for both passengers and goods, the working pressure in the cylinder was equal to 250 ft. head of water. The water was supplied by a steam engine of 20-h.p., pumping from a tank in the basement, which received the waste-water from the lift. An accumulator, with a plunger 36 in. in diameter, loaded with about 30 tons weight, gave the required pressure of water. The ram of the lift was 11 in. in diameter, having a cage at the top 10 ft. 6 in. by 4 ft. 6 in. The greatest load intended to be raised by this lift was 3½ tons. The lift was started and stopped by an attendant travelling in the cage. There were two balance-weights, attached by chains to the top of the cage, balancing the weight of the cage and ram, so that the whole power was exerted to raise the load.

It may be said of hydraulic lifts that there is great steadiness in their working, which, together with their entire safety, renders their use desirable for passengers. Although there is a loss of power occasioned by the constant quantity of water needed for loads, however variable in weight, the machinery required for water-power has much in its favour; it is simple in its construction, and it needs very little attention. On the other hand, the first cost of a hydraulic lift is large, when compared with that of a lift worked by steam-power alone. Where a goods-lift is required, in places where water-power is not used for other purposes one worked directly off the engine offers as economical and convenient a means of raising heavy loads as the hydraulic lift.

I have understood that in some of the hotels in the United States lifts are made with a large screw running up the whole height of the building. This is caused to revolve in either direction by a steam-engine at the bottom, and passes through the centre of the cage, to the bottom of which rollers are fixed, working in the thread of the screw and forming a nut. This appears to be a safe means of supporting the cage, and it avoids the necessity of sinking a cylinder far below the basement of the building, such as is required in the hydraulic lift.

ARCHITECTURAL ASSOCIATION.

A special meeting of the members of this Association was held on Friday, the 1st inst., convened by the committee, in response to a requisition,* for the purpose of considering a proposal for the alteration of Rule XVII. to the effect that the entrance-fee for new members should in future (*i.e.*, after the present session) be one guinea instead of half a guinea. Mr. E. B. I'Anson, vice-president, occupied the chair.

Mr. Gilbert R. Redgrave submitted a motion in favour of the alteration, which, he urged, was desirable and necessary with a view to the improvement of the library by the purchase of more books. An additional reason for the entrance-fee being increased was the establishment of the Association Travelling Studentship, for which any member of the specified age would

* See p. 397, *ante*.

be eligible to compete, even although he had only just joined the Association.

Mr. H. H. Stannus seconded the proposition, and urged that it was eminently necessary to spend more money on the library, which, excellent as it was, was far from being able to meet all the requirements of members.

Mr. Blashill, without formally moving an amendment, opposed the motion, for which, he said, no valid reasons had been adduced. He protested against what he regarded as an attempt on the part of the existing and older members of the Association to sell its privileges at a higher rate than they had themselves paid for the enjoyment of the advantages of the Association. He had yet to learn that the treasury of the Association was at such a low ebb as to call for the proposed change, which he could not but think would have a very serious effect on the welfare of the Association, and even of the profession, by deterring young men just entering upon life from taking advantage of the help which the Association was calculated to give them.

Mr. J. Douglass Mathews, treasurer, said it was quite true that the present resources of the Association were sufficient to defray the cost of its work as now carried on, but at the same time, it should be remembered that with additional funds they could make the Association more useful to the members. He should be sorry to see any step taken which should tend to check the prosperity of the Association, but it could not be denied that the advantages enjoyed by members entering at the present time were far greater than those available some years ago.

The discussion was continued for some time with what may be termed animated prolixity, Mr. Hampden W. Pratt, Mr. R. Phené Spiers, and Mr. Aston Webb arguing in favour of the proposed change, and Mr. Gotch and Mr. R. E. Smith opposing it. It was pointed out by one of the speakers who supported the motion that with increased means the Association would probably be able to provide a more commodious meeting-room than the present one, which has for some time past been inadequate to the comfortable accommodation of the members who attend to hear papers read and discussed.

Upon being put to the meeting, the motion was carried by a large majority, and the special meeting terminated.

The business of the ordinary general meeting was then proceeded with. Nine candidates for membership were nominated, and, on the motion of Mr. Eales, the thanks of the Association were voted to Mr. Alfred R. Pite for his kindness in conducting the members over Exeter Hall on the 26th ult. It was announced that this (Saturday) the 9th, a visit would be paid to the Church of St. Mary Overy, Southwark. It was also announced that the Surveying Class would be commenced early in May.

Mr. L. C. Riddett then read a paper on "Settlements," which we print on other pages.

In the discussion which ensued,

Mr. Blashill proposed a vote of thanks to the author of the paper, which he characterised as most instructive and valuable to the members. Mr. Riddett had thoroughly hit the right nails on their respective heads.

Mr. R. E. Smith, in seconding the motion, said the paper was an extremely important one. His experience was that the advice given by the author with respect to builders was the soundest and best, as well as the most just. There could be very little doubt about it that many of those members of the profession who stuck so closely to the artistic side of their work were bad at figures, and hence the necessity of men with clear heads and well-formed minds, and known as architectural surveyors, coming forward to help in "settlements."

Mr. Aston Webb said he should like to add his testimony to the pleasure and profit with which Mr. Riddett's paper had been listened to by the members. As to the payment for quantities, he thought that the best course was invariably to let the client know that such a payment was made. As to testing the ground with the view to seeing what foundations would be required, trial borings were very desirable, although not always reliable. The valuation of "extras" as they occurred was a desirable course to pursue when it is possible, but under some circumstances that would be a more costly method of procedure than leaving the extras to be valued all together at the end according to the sealed contract prices.

Mr. Lacy W. Ridge observed that he was very glad to hear Mr. Riddett say that he did not regard the whole race of builders as a race of rogues. There was a certain class of people who entered upon building contracts with that fixed, but very unjust impression,—an impression for which, so far as his experience went, there was no ground whatever. In a great many building contracts difficulties arose owing to the interference of the client, and eminently to that of the client's wife. Some people seemed to think that when they had contracted to have a house built, the builder would be able to be quite oblivious of the contract drawings, and to provide them with many things which, although undoubtedly "very nice," would have to be paid for. He thought it was a very desirable course, and one likely to save trouble and disappointment in the end, for the architect to acquaint the client with "extras" as they accrued. The client should also be given distinctly to understand that anything that went beyond the drawings and specifications was an "extra," and that to refuse to pay the builder for, say, a pair of doors not in the specification was as reasonable as to expect the first person he met in the street to give him a five-pound note. Of course, as contracts were at present drawn, the position of builders would be unbearably onerous but for the honourable line of conduct which it was happily the custom for architects to pursue as arbiters between clients and builders. Serious hardships would often result if architects were to take an unreasonably exacting view of all the clauses which were put into building contracts. He cordially supported the vote of thanks to Mr. Riddett for his extremely able and entertaining paper.

Mr. H. W. Pratt said that in the hands of Mr. Riddett a dry subject had been made entertaining as well as instructive. One of the main points which Mr. Riddett had mentioned was the question of orders for additional works, which, of course, should be given in writing, and in a formal way. But many architects who adopted that course at the commencement of a job gave it up before very long, and from very good reasons. The difficulty was to carry it out thoroughly, because the architect often intended an "extra" to be set against some omission. Directly anything of that sort arose architects were apt to at once put aside their intentions of giving formal written orders. For his own part he had always endeavoured to give written orders for extras, either by letter or by some kind of form, but he had not attempted to carry such a practice right through, because points of detail prevented it. With regard to the question of prime-cost prices, Mr. Riddett seemed to think that architects caused a difficulty when they did not add the prime-cost prices, but he (Mr. Pratt) thought that the difficulty arose when they *did* add the prices. He thought that the real difficulty was that architects could not get at the prime-cost prices. Even if they inserted a clause in the specification that the prime-cost prices were to be taken, and that the builder was to add on something in his estimate for his profit, the architect did not then get at the exact price of the article. Even if the invoices were produced they were not always reliable guides. He did not mean to say that builders were rogues, but manufacturers were too prone to resort to the baneful system of commissions. With regard to sub-contractors, Mr. Riddett thought it advisable for architects to recognise them, but such recognition was, in Mr. Pratt's opinion, likely, under some circumstances, to interfere with the due progress of the work. He had been in the habit of putting a clause in his contracts to the effect that no sub-contractor would be allowed to do work on the job unless recognised by the architect as a sub-contractor, but he had always found it advisable not to put too strict an interpretation on such a clause.

The Chairman (Mr. E. B. I'Anson) then put the vote of thanks to the meeting, and it was carried with much applause.

Mr. Riddett, in reply, said that in the paper he distinctly advocated that the client should be informed by the architect that he (the client) paid the surveyor's fees for measuring, but there were clients and clients. He was very glad to find that the experience of the gentlemen who had spoken was confirmatory of his own with regard to the majority of the builders with whom they came in contact. As to the valuation of extras as they accrued, that could not be done except by opening the sealed prices, and, all things considered, he thought it was the best course to leave them to be valued at the finish of the job. On the question of prime-cost prices, he knew something of the difficulties that had been suggested by Mr. Pratt, but he supposed that if the builder got a reasonable profit on his outlay there should be no real difficulty. With regard to sub-contractors, it was not a question whether architects would or would not recognise them in many parts of the country; they must recognise them. Their recognition enabled the architect the better to superintend the work they were doing. In conclusion, Mr. Riddett observed that, although an old member of the Association, he had that evening for the first time ventured to address it from its platform.

The meeting then terminated.

ORNAMENT, HISTORICALLY AND CRITICALLY CONSIDERED.

ROYAL INSTITUTION.

Mr. Statham delivered the third lecture of this course* on Thursday, the 31st ult. Commencing with a reference to Celtic ornament, the lecturer observed that the reason why he had included it in the programme of the present lecture was because the latter would deal a great deal with Eastern and Mediæval ornament, — not that Celtic ornament was specially connected with those schools of ornament historically, but because it represented in an almost typical form the quality which runs through a great deal of Saracenic and Arabian ornament. A great deal of the latter was what might be called "the ornament of ingenuity." What was known as Celtic ornament comprised ancient Irish and Anglo-Saxon ornament. The most remarkable developments of it had been found in the illuminations of ancient Irish MSS., and upon carved stones in Wales. How it originated was hardly known, but it had an obvious connexion with Byzantine forms, and it was extremely probable that in the course of the spread of Christianity westward in the fifth or sixth centuries, ornamental forms of Byzantine type were brought to these islands, and became developed into a special type distinct from that of any other school. Celtic ornament was essentially "the ornament of ingenuity," not the highest and most intellectual class of ornament, but still possessing, much of it, great interest, and remarkable for the wonderfully patient elaboration displayed in its interlaced forms. Having referred to the peculiarities of the "grotesques" occurring in Celtic art, the lecturer proceeded to speak of Saracenic ornament, of which Arabic ornament was one development and Moresque a higher and more artistic development. The characteristics of Arabic ornament were, partly, a very large employment of what might be termed, from a cursory inspection of it, ingenious puzzle-making (although the basis of a great deal of it was a very simple, geometrical one); the peculiar use of conventional forms which seemed, to some extent, dictated by the forms of natural vegetation, but which were, in fact, very far removed from such forms; and the entire absence of any representation of the human or animal forms, such representations being forbidden on religious grounds. Compelled to avoid these representations, the designers of Arabic and Moresque ornament were obliged to devote their thoughts to the elaboration of a class of ornament which was one of the most beautiful and thoughtful ever invented by man, and its development under the conditions named afforded one of many other instances in the history of art, how, when art-growth was prevented in one direction, it blossomed forth in some other quarter. Moresque ornament was characterised by still greater ingenuity and beauty, although in some of its forms it was more the ornament of ingenuity than the ornament of art, only becoming beautiful when artistically coloured. In the finest types of Moorish ornament we had a system of flowing ornament carried over a surface, though distributed on a geometrical basis into equally divided spaces, but with an amount of elaboration and beauty which took from it all appearance of its being mechanically repeated. Many of the designs are on two or three different planes. By the kindness of the authorities of the South Kensington Museum, Mr. Statham was enabled to exhibit some highly-finished *fac-simile* diagrams of Moorish ornament from the Alhambra and other buildings.† To

* For notices of previous lectures see pp. 383, 415, *ante*.

† These, we understand, were from some portfolios of very fine illustrative drawings in the Art Library at South Kensington, originally made for, and under the superintendence of, the late Mr. Wornum.

pass from Saracenic to Indian ornament was to take a very remarkable leap, for it might be said, putting it broadly, that such a transition was one from an ornament of geometry and ingenuity to one of flowers, and the transition would have been still more remarkable if Persian ornament had been included. In a very great deal of Indian ornament, natural forms, and especially those of plants and flowers, were imitated in a manner that was highly realistic. Indian ornament was, indeed, very much closer to nature than that of the Greeks. One reason for this was probably to be found in the fact that a large proportion of Indian ornamental art was applied to textile fabrics, to which such realistic forms as had been referred to were as suitable as they were unsuitable to architectural requirements. Indian and, indeed, Eastern ornamentists generally, did not, in the majority of cases, consider it necessary to define their ornament in the methodical way that the Greeks and, in a less degree, the Gothic artists did. Oriental ornamentists generally seemed to be much more guided by feeling than by the consideration of giving logical arrangement to their work, as would be especially seen when they came to speak of Japanese ornament. Having, by means of Indian shawls and other textile productions (lent from the "circulation department" at South Kensington), pointed out in detail some of the chief characteristics of Indian ornament, the lecturer proceeded to treat of Gothic ornament. In the previous lecture, he had defined Byzantine ornament as the connecting link between the antique and the Mediæval schools. He now traced the gradual development from the Romanesque to Norman and Gothic in its various phases, and was able to make his observations more interesting and intelligible to his audience by means of an interesting collection of casts, kindly lent by Messrs. Farmer & Brindley, the well-known architectural sculptors. He showed that in the early forms of Norman detail there was very little naturalistic ornament, and that Gothic architecture in its prime was characterised by deeply-sunk mouldings and deeply under-cut carving, giving life and vigour to the buildings of the period. He incidentally noticed some of the extremely beautiful naturalistic carving at Southwell Minster, and proceeded to show that the decadence of Gothic architecture was marked by shallow, ill-designed mouldings and by carving in low relief having the effect of *appliqué* work, rather than of ornament developing from the architecture.

The fourth and concluding lecture of the course was delivered on Thursday last. It may be added that each of the lectures has been illustrated by a large number of wall-diagrams, supplied by the lecturer, besides the objects lent from South Kensington and elsewhere.

OBITUARY.

Mr. John Ford Gould, of Barnstaple, a well-known architect in the West of England, died suddenly in London last week. He left Barnstaple to make arrangements for restoring a church at Bristol, on Monday, the 28th ult., and went on from that city the next day to town. The following morning he was found dead in bed at the Horse-shoe Hotel, Tottenham-court-road. Mr. Gould was the son of Mr. R. D. Gould, the present borough surveyor of Barnstaple, and had an extensive local practice, particularly in church restoration. He was an artist of no mean ability, and his tastes were of the higher order. He did much good work. One of his best efforts was the restoration of Winkleigh Church (referred to in these columns, November 29th, 1873), but in every part of the county, as well as in Cornwall, his work, ecclesiastical or secular, is to be found. His eye for colour was most refined, and his mouldings—he delighted in Early Decorated work—were always beautiful. Mr. Gould was never married; although comparatively a young man,—he was but little over forty,—his health had been indifferent for several years, and his sudden end was not wholly unexpected. One of Mr. Gould's churches, that of Sheepwash (his last work), is to be opened this month.

The Redruth Cemetery Chapel, Cornwall, has now been completed by the contractors, Messrs. John R. Julian & Sons, of Truro, and taken over by the Burial Board in connexion with the new burial ground, which has been recently obtained, laid out, and enclosed by Mr. John Willey, architect, late of Redruth.

QUESTIONS IN COLOUR.

SIR,—Once more I would ask leave for space in your valuable journal wherein to draw attention to the neglected and confused state of what would be a fascinating science, viz.,—"Colour." "The cultivation of the sense of colour is, at present, almost wholly neglected, as was once the sense of hearing, and the voice," says Dr. Jefferies, in the Society of Arts *Journal* in August last. We cannot wonder that it is so when we consider how utterly confusing and contradictory is the amount of information on the subject, from the time Newton first decomposed a solar ray to the latest information on the subject, *i.e.*, that of Professor Rood ("Modern Chromates.")

To attempt to arrange the facts and observations of Newton, Herschell, Bunsen, Young, Airey, Maxwell, Draper, Field, Chevreuil, Stokes, Abney (the photographer), Goethe, and Rood, into a homogeneous whole, would require a volume. But there are still questions that at present are explained on no definite theory, and since these questions are of primary importance in the practical application of colour to the decorative and fine arts, I wish to endeavour, by calling attention to them in your widely-read journal, to arrange them on a more satisfactory basis. They are the questions of *absorption* and *contrast* of colours and "complementaries." The first, that of absorption, has principally to do with the physical principles of colour. Contrast is concerned with material (*i.e.*, coloured surfaces) colours, and has to be considered in connexion with the visual impressions, thereby bringing the physiological sensation of vision into the explanation; and "complementaries" have especially to do with this physiological impression or sensation of sight.

Having made the subject of colour a study for some considerable time past, and during the last few months been practically endeavouring to popularise it,—it is a wonder to me that it has been allowed to slumber so long, for even the most minute object we turn our eyes to we observe has colour of some sort, and yet observers seem never to have asked themselves to what cause such colouration is due. I am not a mere theorist alone, but have in many cases experimentally proved the following theoretical principles to be true. With the question of absorption, however, I have not sufficiently extended the experiments as to prove the following theory, but have sought an explanation of this phenomenon in Young's explanation of the colours of "striated surfaces and of thin plates" (vol. 92 Phil. Trans. 1802).

Absorption.—A coloured surface, say red, is supposed to owe its colour to the following idea: a solar ray of light is composed of an innumerable number of light-waves travelling at different speeds; seven of these waves produce appreciable different colours,—red, orange, green, blue, indigo, and violet (it matters not whether we reject violet or not for the present explanation). Now, these seven rays falling on a surface cause that surface to reflect one of these seven colours, in our present case *red*, and the reflected rays striking the organ of vision, the sensation of red is produced. What now has become of the other six colour-rays? Our physicists tell us they have been *absorbed*. Chevreuil teaches us that not an iota of matter or force is wasted in Nature; therefore if these six rays are absorbed they must, perforce, be performing some duty or action in the body that has sucked or swallowed them up, and therefore we should be justified in expecting to see a change of state in the constitution of the body; but physicists have not endeavoured to trace out if there be any such action. I think, therefore, that the following explanation is a more satisfactory one. It is a well-known fact in mechanics, or the science of forces, that if two opposing forces, equal to each other in every respect, meet, the effect is *nil*,—*e.g.*, if two sound waves, equal to each other, meet so that the crest of one coincides with the trough of the other, the effect is silence; or, in other words, destruction of effect. Let us apply this principle to that of light.

First, we have the solar ray given off; this ray, as we have said, consists of seven different rays, causing seven distinct colour sensations, and each of these colour-producing rays (colour is not inherent in them, but is a physiological sensation caused by the mechanism of the eyes and brain) has a different *wave light*, that of the red being longest, 1-39,000th part of an inch, and that of the violet the shortest, 1-57,000th part of an inch; necessarily from this we should infer that, since all the rays have to travel the same distance, that of the space between the sun and earth, the vibrations of the red-producing ray would be fewer than that producing the blue sensation, since its wave light is longer. Such we find is the case. Well, then, when this solar ray falls on a surface, may we not consider the molecular structure is such that it can only sympathise with the length of wave of one of them,—as for example the red,—and that the remaining six are unaffected by it, but, reflected back in the path of the incident ray, the crest of the reflected ray meets with the trough of the incident ray, or *vice versâ*, and so destruction of effect is the result?

With the red ray, however, the object on which it falls has sympathised with it, owing to the molecular condition of its constituents being able to appreciate a vibration of 1-39,000th of an inch. Thus, the incident ray has sunk 1-39,000th of an inch into the surface of the object, has been reflected, and sent forth again from the surface at the same rate of vibration.

With a surface that causes the sensation of violet, we must suppose that the molecular structure of the object can only respond to vibrations whose wave-light is 1-57,000th part of an inch, and therefore reflects that and no other.

Now, according to its absorption showing the body would be capable of appreciating all the seven rays, but six would be swallowed up, and the seventh only cause any visual effect. But then the question arises, What are these six absorbed rays doing? They cannot be *wasted*, but must be doing some action, and if so, what? Is it not more feasible to suppose that, disgusted with the non-reception of them by the object,—owing to its incapability, from its molecular structure, of responding to them,—they have returned in the path whence they came, and returned in such a way (crest meeting trough or *vice versâ*) that neutralisation of the incident ray is the result? For a substance that can reflect a vibration of 1-39,000th of an inch cannot be supposed to reflect one of 1-57,000th of an inch without causing some physical change. This is as much as to say that after a vibration whose amplitude of vibration is 1-39,000th of an inch has struck an object able to respond to it, the only physical action it undergoes is that of *reflection*, the reflected ray being in a similar condition to the incident ray.

If the reader will refer to the volume of the "Philosophical Transactions" already mentioned, he will, I think, be convinced of this after he has studied the illustrations therein given by Young. I would very much like to reproduce them here, but fear I am already trespassing on the valuable space of this journal.

As a practical proof, however, of the above theory, I would offer the following:—Hold a prism before a luminous source, so that a spectrum of the seven colours is thrown on to a white surface; each colour is seen distinctly If now a red surface be substituted for the white one, only the red spectral colour will be reflected, and blackness,—indication of destruction of effect,—where the other six colours before appeared. In explanation of this phenomenon of blackness, I cannot but reiterate what I have already said, that the molecular condition of the red body is only able to respond to the red wave-length, all the other wave-lengths being reflected in the path of their incident ray, whereby the action of each incident ray is neutralised, and the effect is *nil*, or blackness (absence of effect). However, enough of "absorption" for the present; we now consider,

Contrast of Colour v. *Complementaries.*—The laws of contrast and "complementaries" were specially treated by Chevreuil, and we might say almost exhaustively, and as they were set forth by him, so are they now received as infallible. Appreciating his immense and zealous labours devoted to the subject of colour, I, however, cannot slavishly accept all his *dicta*. The contrast of colours is the portion of the subject that especially affects decorators, artists, painters, manufacturers, designers, and all manipulators of coloured surfaces; therefore I want to lay the following facts before the reader.

Chevreuil is an advocate for Field's three-primary theory; that is, he maintains that red, yellow, and blue are primary colours, and that green, purple, violet, and orange are secondary ones; and, moreover, that these secondary hues are complementary to the primaries. Thus

Field demonstrated (I do not say whether his conclusions are incontestable or not, as we are not now discussing the subject of primary colours) that yellow, red, and blue are primary colours, because those colours when looked at from a material point of view,—*i.e.*, that of concrete colours, as pigments, coloured stuffs, &c., in contradistinction to physical colours, that of coloured lights, &c.,—they cannot be split up into other colours; and violet, green, and orange he considered secondary colours, because violet (or purple) can be produced by mixing red and blue pigments; green by mixing blue and yellow; and orange by mixing red and yellow; and these "secondaries" are called complementary colours, because their constituents are the remaining two primary colours, *e.g.*, red is a primary, and its complementary is green, because green is composed of the other two primary colours, *i.e.*, yellow and blue.

Moreover, he thought this point conclusively proved, because he demonstrated that yellow has an equivalent of 3, red of 5, and blue of 8 parts; that is, that a ray of white light, which he considered was made up of yellow, red, and blue rays, consisted of a whole of 16 parts. And likewise he considered that harmony of colouring was produced when either all these primaries, or a primary and its complementary, were juxtaposed. These conclusions may be very good when confined to material colours, but they are not fulfilled when physical colours are considered.

However, Chevreuil accepted this view, and enlarged it by a conception of his own, viz., that when a primary was viewed by itself, to satisfy harmony, the visual organ mentally called up the complementary to the primary colour looked at; thus he maintained that if one looked at, say a red, for some few seconds, its complementary *green* was conjured up by the visual organs, thus bringing the question of physiological effect to bear on the point. Moreover, he carried his conception so far as to say that when a primary and its complementary were juxtaposed, they mutually heightened each other, because (say red and green are contiguous) red calling up green would heighten the tone of the green, and green calling up red heightens the tone of the red surface; and then he set to work to carry out his idea under every circumstance (which, however, we cannot now go into, but would refer the reader to "Chevreuil on Colour," translated by Spanton, 1856), and formulated numerous rules of "Contrast of Colour."

His theory of contrast has been almost universally accepted by uninquiring minds, probably because he applied it in every conceivable way.

Now, according to this theory of his, if a red and blue were juxtaposed, the blue would be rendered bluer in tone, because it would be looked at through the conjured-up complementary of the red, *i.e.*, green which has blue in it, and the red would be rendered yellower for an analogous reason.

How can we, however, reconcile this theory with the following facts? Divide a square inch or two of paper into squares of about a quarter of an inch square, and alternately colour these red and blue, with vermilion and cobalt pigments. Partially close the eyes and look at the coloured surfaces from an angle of about 45°: the visual impression is that of a violet (or purple) sensation; look along the edge of the paper, *i.e.*, let the coloured surface make an angle of about 5° with the eyes,—this violet colour is then much better perceived.

Blue and yellow squares thus juxtaposed give a green impression, and red and yellow an orange hue. This fact, then, is entirely discordant with the conjured-up complementary theory. This practical way, therefore, of studying juxtaposition of colours should be the one decorators, &c., should adopt, instead of unquestionably receiving the theory of "complementaries." Let me adduce another fact in support of these non-existent "complementaries."

Colour an inch or two red, and a similar amount of surface blue, and place these coloured surfaces at right angles to each other: when looked at at an angle of 45°, the line of meeting seems filled with an atmosphere of purple; and if the blue be looked directly down upon, red rays will be perceived as emanating from the red surface, and tinge the blue reflected rays with red, and again raise an impression of purple; or if the red be looked at in this way, the blue rays proceeding from the vertical blue surface will conduce to a sensation of purple. Since such is the case, we see that the law of contrast is erroneous, and that the theory of "complementaries," as conjured up by Chevreuil, is fallacious.

How, now, can we explain the two last-mentioned phenomena? The successive coalescing periods at which the blue and red reflected rays meet correspond to the rate at which the violet ray travels, and hence are productive of the impression of a violet colour.

I have many similar facts to urge in favour of this idea, but for the present I have said enough to show the erroneous and unsatisfactory state in which the questions of comparison and complementaries are at present.

I hope these lines will induce those competent to deal with the subject to bestow some attention on colour. HENRY C. STANDAGE.

P.S.—Since the publication of my letter in the Society of Arts Journal for August 27, wherein I called attention to the want of a universal standard of colour, I have come across Radde's "Universal Colour Scale," published some time since by a Continental firm. This certainly should be better known and universally adopted by all manipulators in colour.

GRIMSBY AND ITS TRADE.

AT a time not very distant, the locality of what is now Grimsby and its growing port was such a scene as Longfellow pictures in a "thatch-roofed village," where lived "men whose lives glided on like rivers that water the woodlands." There was a natural harbour even before the beginning of the present century, but it was not till the first year of this century that what was known long as the old dock was opened. It was constructed by a private company, who sold it long afterwards to the Manchester, Sheffield, and Lincolnshire Railway Company, as a water terminus to their port. The latter discovered the value of the site of the port, and determined to increase its facilities for traffic. They looked to the opening out of the foreign trade, and determined to make a large new dock. The first pile of this was driven in 1846, and the foundation stone was laid a year or two later by Prince Albert, who expressed the hope that it might become a new centre of life with the vast and increasing commerce of the world, and a "most important link in the connexion of the east and west." In the year 1852 this dock was opened with a state and ceremony which has been not always paralleled in the history of the opening of more pretentious shipping enterprises on the east coast. Two years later it was visited by the Queen, and the capabilities of the port were pointed out to her, and through her to the world. Other works have been added to facilitate trade to that port; two large graving-docks, "fish" docks for the fishing-smacks, a new Union dock, opened a year or so ago, and a series of railways, sidings, wharfs, and warehouses, such as put to shame the efforts of the owners of some more important ports. The effect of these works on the trade of the port of Grimsby has been vast: instead of 500 vessels entering inwards and outwards, as was the case about thirty years ago, there are now yearly 2,300 so entered, and the tonnage has correspondingly risen from 130,000 tons to between 700,000 and 800,000 tons, tolerably equally divided between the two trades.

The population of the town has risen rapidly; it was 3,688 in the year 1841; it rose to over 8,000 in the decade following, to 11,000 by 1861; at the time of the last census it was 21,416; and it is estimated that at the present time it is about 30,000, an estimate that will be speedily tested. The number of houses has risen from 956 to about 6,000, and the rateable value from 7,951*l.* to 70,000*l.*, no unfair criteria of the growth of the town and port. The official reports of the Manchester, Sheffield, and Lincolnshire Railway show that the coal trade of the port grows, and that with tolerable rapidity. It may be sufficient to say that whilst in the first half of the year 1878 the quantity of coal shipped was 127,498 tons, chiefly foreign, and in the last half of that year it was 201,987 tons; in the first half of 1879 it was 135,081 tons, and in the last half of that year, 197,552 tons. In the last year the quantities were,—first half, 158,890 tons, and last half, 234,985 tons, so that there has been a very large increase in the most recent year,—of over 70,000 tons. This gives to the Manchester, Sheffield, and Lincolnshire Railway an increase at the rate of about 4,000*l.* for the year, which must be considered a very satisfactory increase even on the very large amount that that great Company has invested in the port of Grimsby. It proposes, however, to continue to develop the traffic, and to expend a further sum of 45,000*l.* in providing additional facilities for the increase that it anticipates, and it seems to look forward to the growth of that branch of the coal trade which as yet has been only cultivated on a small scale at Grimsby,—that of the coasting coal trade. It is not certain that these anticipations will be realised, for it is clear that below the Tees the coasting coal trade is little known on the East Coast, and that there may be very good reasons to be found in the fact that when out of the Northern coal-field the domain of railway-carried coal is entered on, and it will need very great facilities and very cheap rates and expeditious carriage of coal to enable sea-borne Yorkshire coal to compete with that borne by rail to the great sources of consumption.

Grimsby may be said as yet to depend in very great degree on the export and import trade, and on the sea fisheries. Coal and timber and fish are in very great measure its staple trades. And it is evident that with the powerful assistance of the great railway company behind it, with a continual growth of its shipping ports, with ready communication with the Continent, and with abundant room for growth,—that growth is in the early future probable. Before it are, with the ocean only practically between, great consuming countries, and great exporting countries also, so that it would appear that with the mineral wealth behind it, and with the great population in the heart of Yorkshire and Lancashire in the most direct communication with it, there should be no doubt as to its future. Its growth, though rapid, has been much less than that which had been expected in the early years of its progress, and it has certainly not shot ahead with that wonderful progress that has been known in the north-eastern towns of Middlesbrough and West Hartlepool. But it has known comparatively steady growth, and with the agencies that are at work now it is possible that in the future it may make more rapid progress. With the development of facilities for trade, and with the growth of international traffic, it is tolerably certain that the future of Grimsby is bound up, and that now promises fairer than of yore.

In the dock-works the Manchester, Sheffield, and Lincolnshire Railway Company have invested over 2,000,000*l.*, and they have now a water area of over 72 acres. It is evident from the recent attitude of the ports at the south of Yorkshire and the district, that there will be a struggle for the growing coal trade of that part, more especially for the foreign trade, and in that struggle the port of Grimsby will take no mean part. It is preparing itself to claim a full share of the trade, and there is now in progress in its older neighbour's district an increase of facilities also. On that struggle and on the attempts of Grimsby to increase its foreign trade, there will be great interest felt, and the commercial world will certainly look with curiosity on the attempt of the young port to develop new trades.

THE DISCOVERIES AT OLYMPIA AND GERMANY'S SHARE.

THE director of the German excavations at Olympia, Dr. Treu, has presented to the Greek Minister of Worship and Education a catalogue of the antiquities found at that spot. At the same time Dr. Treu has mentioned those relics which, in conformity with the terms on which the German Government undertook the work of excavation, may be given up by the Greek Government to Germany. In this catalogue there appear the following interesting objects:—Class 1 consists of marble statues and reliefs, and comprises the Hermes of Praxiteles, the Nike of Paionios, twenty-one colossal statues from the frieze of Paionios, twenty colossal statues from the frieze of Alkamenes, one relief without head, three half-finished statues, and seven heads belonging to the metopes of the Temple of Zeus, and about fifty lions' heads from the same temple, five of which, being duplicates, are claimed by Germany. Further, in the same class there are five reliefs from the frieze of the treasury of the Megarensians, one colossal head of Hera from the Heraion, a head of Eperast with an arm and a foot, a head of a soldier of Achæan workmanship, head of an Ephebos, a small statue of one of the Eumenides,

a colossal statue of Zeus, the statue of Apollo, the statue of Dionysos in sitting posture, a small head of Dionysos, a head of Aphrodite, two statues of the Nemesis Tyche, one of which Germany claims, a small statue of Asclepias and of Hercules, statue of a Satyr playing a flute, two torsos of men nude, six statues of Roman emperors, two of which being duplicates are claimed by Germany; two torsos of fantastically-shaped men in the nude, of which Germany seeks one; three statues of men wearing cloaks (one claimed for Germany); five statues of men in costume, seventeen statues of women clothed in draperies (five claimed for Germany); twelve heads of Emperors and private persons, three torsos of small statues, a statue representing the bull of Regilla, archaic statue of a lion, four limestone reliefs, representing horses and birds; and finally a colossal ankle. Altogether this class includes 180 objects, statues, reliefs, &c., besides 1,500 fragments belonging to similar works.

In Class II., Stone Inscriptions, about 1,000 have been found. Of these 400 are well preserved, while 600 are only fragments more or less imperfect. Of this class the German Government wishes to have some duplicates belonging to the catalogues of priests.

The Third Class consists of the following Bronze objects:—A head of Zeus; head of a man, together with a foot; portions of several large statues, two large reliefs representing Hercules, nearly 100 small statues, of which Germany claims twenty-five; about 6,000 votive offerings representing animals, 300 of which are claimed by Germany; twelve small reliefs, a number of tools, animals and articles of adornment, arms, hooks, buckles, &c., of which Germany desires to have a selection; 200 weights (Germany claims half), and about fifty inscriptions, six of which Germany desires to have. Altogether there are no fewer than 14,000 objects of art, or fragments of such objects, in bronze.

The Fourth Class comprises articles of earthenware, terra-cotta, and the like. Here we find two large heads of Hera, of which one is claimed for Germany; a head of Zeus, a figure of Silenus, of Nike, and of a woman, all of which are in fragments; three lions (one claimed for Germany), and a dolphin. Then there are numerous small statuettes, including 500 votive offerings representing animals or men, of which Germany claims fifty. There are, further 1,500 miscellaneous articles, as vases, lamps, weights, shuttles (forty-five being duplicates claimed by Germany), and about 2,000 fragments of architectural ornaments, one-fourth of which are claimed for Germany. In all, this class includes 4,000 objects, or fragments of objects, of art, of which 600 are claimed for the German Government.

The Fifth Class includes architectural remains. Among them there are fifty temples, treasure-houses, gates, altars, &c., besides aqueducts and numerous fragments of each of these kinds of structures. The German Government desires to have twenty models of as many different edifices, besides some of the aqueduct pipes.

The Sixth Class comprises coins. They are about six thousand in number. The German Government requests that they may all be sent to Berlin, and there cleansed and polished in presence of a Greek commissioner. The duplicates that may be found are claimed for Germany.

In the Seventh Class is a variety of miscellaneous objects in different materials, including iron, lead, glass, bone, &c. The German Government desires to have samples of each. The demands of the Government of Germany for the duplicates and for samples were referred by the Greek ministry to a committee of Greek officials and servants. This body has resolved, by a majority of votes, that the Greek Government must not act simply on the sixth article of the Convention, originally concluded between Greece and Germany prior to the commencement of the negotiations. Before the articles desired by Germany could be given up to her, the members of the committee held that a special Act should be passed by the Greek Parliament, authorising the gift. Owing to this decision on the part of the committee, the Greek minister (Papamichalopoulos) has appointed a special commission of Greek archæologists, consisting of MM. Eustratiades, Kastorchis, and Mylonas, who have been sent to Olympia to inspect, personally, the objects demanded.

FEVER-BREEDING DENS IN HOLBORN.

WHEN small-pox is raging in several parts of the metropolis, a statement which was made on Friday week by the Rev. A. H. Mackonochie, before the Metropolitan Board of Works, becomes one of startling gravity, as showing how fever and epidemics such as small-pox are engendered and spread. The occasion which gave Mr. Mackonochie the opportunity of making this communication to the Board was a deputation which waited upon that body for the purpose of urging upon them to complete the widening of Gray's Inn-road, and Mr. Mackonochie was one of those who addressed the Board on behalf of the deputation. He stated that when he went into the district about twenty years ago the population was 8,000; but since then the accommodation had been reduced one-half, whilst the population had only diminished one-quarter, and that in spite of the vigilance of inspectors, families were living in garrets and cellars which were unfit for human habitation. People who used to live in two rooms were now confined to one, and those who had previously resided in one room had now to share it with others. He named a case, as within his own knowledge, where a working tailor was making clothes for a large firm in another part of London. In the same room in which this working tailor was employed was the body of a child who had died from small-pox, another child in bed seriously attacked with the same disease, together with the man's wife and three other children. He added that the tradesmen in the district had to depend in a great degree upon the poor of the locality, and that considering the effect upon trade caused by delay in carrying out the improvements, he thought they ought to be proceeded with as soon as possible.

Mr. Mather, a member of the Holborn District Board of Works, also addressed the Board on behalf of the deputation, urging the Board to pull down more houses in the locality for the purpose of improving the thoroughfare, and also of promoting the erection of a better class of dwellings. In order to show how ready the public were to avail themselves of improved property in Holborn, he observed that the portion of Gray's-inn-road abutting on to Holborn, which had been dealt with by the Board, was now being built upon. What the deputation wished was that the Board should clear the space in their hands for the benefit of the public, and complete the widening of the east side of the road.

THE MOST ANCIENT JEWISH INSCRIPTION YET DISCOVERED.

WE have hitherto been silent as to a very remarkable inscription which has recently been discovered by Herr Schick in the conduit of the Pool of Siloam at Jerusalem. The courtesy of the secretary of the Palestine Exploration Fund gave to one of our contributors, who has paid unusual attention to the study of Palaio-Aramaic, a tracing of a copy of the inscription. But the words which could be deciphered proved to be so different from those which Mr. Sayce, who visited the spot early in February last, read in corresponding lines and portions of lines, that we felt it to be unsafe to hazard any remarks until a more accurate copy was procured. We hope that it will be found practicable to photograph the inscription by the use of magnesian light. Scholars in this country are not likely to be satisfied with any representation short of the exactitude of photography. It is not that any doubt is to be thrown on the good faith of a copyist. We have no such thought. But the inscription is very difficult to see. Any one who attempts to copy it must either be acquainted with the Palaio-Aramaic alphabet or not. In the former case he will be naturally induced to indicate the form of a letter of which what may be a part is distinct. In the other case he may give too much value to casual marks, and thus disfigure the real outlines of letters.

As far as the tracing goes, the letters seem to deserve the character of high antiquity attributed to them by eminent scholars. But the case is not clear. There is a Heth, which, if correctly drawn, may be regarded as more archaic than the corresponding type on the Moabite stone. But it is curious that this character only occurs once. On the other hand, there are figures which approach more closely to Cufic than to any alphabet with which we are acquainted. There are also cursive or semi-cursive forms, resembling those on some of the much-disputed Moabite objects exhibited by Mr. Shapira. It will thus be seen that the subject is one of very high interest, on which full information will be welcomed by all those who take an interest in Biblical or in Oriental archæology, but on which it is premature at the present moment to offer any decided opinion.

CITY OFFICE PROPERTY AND ITS VALUE.

AT the half-yearly meeting of the shareholders in the City Offices Company, which was held last week at the company's offices in Palmerston Buildings, some interesting statements were made as to the extent and present value of this description of property in the City. The report, amongst other things, stating that owing to important leases having terminated, the rentals for the half-year had somewhat decreased. The chairman, Sir Thomas Dakin, in moving the adoption of the report, said the shareholders must bear in mind that the supply of offices in the City had wonderfully increased during the last two years. When recently walking through Drapers'-gardens, he had been surprised to see upwards of 5½ acres of land upon which offices were now in course of erection. He observed that at the commencement of the year the unlet property of the company represented 6,575*l*., but this sum had been reduced, by the introduction of new tenants, to 4,370*l*. The company had passed through a critical period, but notwithstanding this, and the great increase of offices to which he had referred, their property was situated in the best parts of the City, and as commerce improved so would the demand for their offices increase. During the discussion which followed on the chairman's remarks, Mr. Stevenson, one of the shareholders, remarked that the great blot in connexion with the company was the number of unlet offices in Palmerston Buildings, representing at the close of last year 5,300*l*. He added that they were charging at too high a rate for their offices, but to this the chairman observed that if they reduced the price for some of the tenants, others would also require it. A dividend of 4s. 6d. per share was declared.

SALES OF WEST-END AND CITY PROPERTIES.

LAST week, Messrs. Broad, Pritchard, & Wiltshire offered for sale, at the Auction Mart, under an order of the Court of Chancery, a quantity of leasehold property in Regent-street and Jermyn-street. It was divided into five lots, three of them consisting of business premises in Regent-street, and the other two lots comprising newly-erected residences in Jermyn-street. The Regent-street property consisted of two houses and shops, containing five floors each, and basements, one being let on lease to Messrs. Carpenter & Westley, opticians, for a term expiring in 1886, at a rental of 558*l*. per annum, and the other let on lease to Messrs. Capper & Waters, for a term expiring at Michaelmas in the present year, at a rental of 349*l*. per annum; together with the adjoining premises containing four floors and basement, let on lease to the Electric Telegraph Company, but now held by the Postmaster-General, for a term expiring in 1883, at a rental of 350*l*. per annum. The whole of the property is held from the Commissioners of Woods and Forests, for an unexpired term of thirty-five years, at an aggregate ground-rent of 130*l*. per annum. There was a very close competition for the three several lots, which were sold for the aggregate sum of 21,300*l*. The two houses in Jermyn-street, each containing five floors and basement, which are let on lease for a term of twenty-one years from March 1874, at an aggregate rental of 607*l*. per annum, and held from the Commissioners of Woods and Forests, for a term of eighty years from 1870, at a ground-rent of 64*l*. per annum, were sold for 8,900*l*.

Messrs. Winstanley & Horwood also offered for sale two freehold mansions in Harrington-road, South Kensington, which were sold for 6,700*l*.; ten leasehold villas in Augustus-square, Regent's Park, held on lease for an unexpired term of forty-one years, at peppercorn rents, and let at rentals amounting to 470*l*. per annum. They were sold for 3,490*l*.

The same firm likewise offered the freehold premises, Nos. 21 and 22, Gutter-lane, and No. 6, Huggin-lane, in the City, which realised 7,850*l*.

ARTISTIC STENCILLING.

Ordinary stencilling is a flat and monotonous piece of business. Mr. George Howe has perfected a system in which, though stencil-plates are used, the distinct individuality of the workman may be maintained. As the workman proceeds with his work so he arranges his hues. The designer having first determined the general colour—he is, of course, careful to select from nature, which supplies him with such charming tones, changing in every leaf and in every season, — the colours and tones are, by the peculiarity of this treatment, wrought out, preserving in gradation the half-tones, which are not attainable by the old method. The object is to maintain flatness, with variety of hue, and is an effort to raise the taste of the ordinary workman. This removes from stencilling the stigma of being inartistic and mechanical. Another object is to get this done at such prices as to be within the reach of the many. By the present system ornament can be varied with ease, presuming, of course, the proper balance of parts is maintained, thus removing the monotonous repetition of one design which, however good in itself, oftentimes becomes tiresome by repetition. In order to produce this cheapness, combined thought and mechanical means are brought into use, and the result is placed within the reach of all who require decorative work, worked out in non-poisonous and washable materials. The "Charlton white" made as an oil-colour, and as "Duresco," or washable distemper as manufactured by the patentees, 107, Cannon-street, is found suitable for the purpose, as it does not lose its purity of tone.

If severe conventional ornament is required, more regular modes of working must be arranged. The balance of colour will in this case, of course, be more rigid, but the same transparency of effect will be maintained.

RE-BUILDING THE NORWOOD INDUSTRIAL SCHOOLS.

In consequence of the inadequacy and present defective condition of the Industrial Schools at Norwood, belonging to the Lambeth Guardians, the re-building of the same was some time ago decided upon, and Mr. Robinson, architect, was employed by the Board to furnish designs and plans for the new buildings. At last week's meeting of the Guardians, Mr. Robinson submitted his plans, which provided for the present school buildings, with the exception of the new school-room and the probationary ward, being taken down. The plans propose accommodation for 800 children, at an estimated cost of 50*l.* per head, the entire cost of the proposed new building being thus set down at 40,000*l.* In answer to questions from members of the Board, Mr. Robinson stated that portions of the present building might last for ten or a dozen years, but not longer, and he thought it was not advisable to graft any portion of the old upon the new. With regard to the width of the buildings—18 ft.—the Local Government Board recommended it, but he should personally have liked them a little wider. In answer to one of the guardians as to whether he knew of any building with rooms of similar width, Mr. Robinson instanced the Brentwood schools. The plans were discussed at considerable length, several of the Guardians present objecting to them as involving an unnecessarily heavy expenditure, and that additions to the present schools would answer every required purpose. On the other hand, it was pointed out that in ten years' time the present buildings would have to come down, and the chairman and other members observed that they would rather see new schools erected than patch-work. The erecting of entirely new buildings might entail a heavy expenditure, but it would be the cheapest in the end. The plans were ultimately referred to a committee of the whole Board, who should meet the architect at the schools, when explanations as to their general design and details would be made.

Melbourne Exhibition. — "Lincrusta-Walton," the Sunbury Wall Decoration, has obtained a first-class award at the Melbourne Exhibition. —— Mr. Geo. M. Hammer has received a first prize for school and college fittings.——Messrs. F. W. Reynolds & Co., of Acorn Works, Blackfriars-road, have obtained a first-class award for their exhibits.

THE PROPOSED NEW WORKHOUSE IN DULWICH.

The agitation against the erection of the proposed new workhouse at Champion Hill, in Dulwich, by the St. Saviour's Board of Guardians, increases in intensity, and although the Local Government Board has given its consent to the purchase of the land, efforts are being made to induce them to reverse such consent. At a public meeting of the residents of Dulwich, held last week at the Lecture Hall, Dulwich-grove, to protest against the project, letters strongly condemnatory of it were read from Mr. Charles Barry, architect to the College Estate trustees, the Lord Mayor, Sir Henry Bessemer, and others. The Lord Mayor, in his letter, stated that an unavoidable engagement only prevented him from being present to offer his most determined opposition to the project. Mr. E. Dresser Rogers, who presided, denounced the project as a great injustice to be perpetrated on the neighbourhood. There were few districts in the metropolis where, during the past few years, dwellings had risen up more quickly, or where they were of a better class, than in East Dulwich, and now the residents, having purchased their houses, found themselves threatened with such a building close to their very doors. He admitted the fact that they would always have the poor with them, but that was no reason why they should have other people's poor as well as their own. One of the speakers said it was probable that the new Dulwich Lower School would be placed in the neighbourhood, and he was quite sure the workhouse would do no good to the school. A resolution was passed to the effect that the workhouse would be a nuisance to the neighbourhood, and a great injury to property. Also a resolution to the effect that the Local Government Board, having given their sanction to the purchase of the ground without having had all the facts before them, be requested to reconsider their decision. A further resolution was to the effect that, failing other means, the authorities of Dulwich College and other owners of land in the vicinity be requested to co-operate with the inhabitants in taking legal steps on the matter.

THE COTTAGES OF WESTERN LABOURERS.

Sir,—In November, 1872, your special correspondent accompanied me to West Chinnock, Chisleborough, and Montacute, to view the cottage-accommodation in that neighbourhood (Yeovil, Somersetshire), and you at that time gave a graphic description of the miserable hovels, with a drawing taken from a photograph of one of them in the first-named village. Your correspondent, probably from information supplied by myself or friends, described these West Chinnock cottages as the property of Lord Portman, but no sooner did the article and diagram appear, than the surveyor of that nobleman's estates denied that these cottages belonged to his lordship at all. Now, it appears that certain exchanges took place between Viscount Portman and the Earl of Ilchester, who are neighbours, and whose properties are very much mixed up. These exchanges are considered very suspicious by the people. I have just been to Chinnock, and I find that the identical hovel you gave a drawing of has been repaired, and is now used as a cow-house. But what has become of the people who lived in the house? They have emigrated, I understand, as so many of the people do from our rural districts, partly from the labour-saving, land-starving policy of the farmers, to make up high rents, and partly from the want of cottage-accommodation. As there were nine hovels of the class you described,—photographed at the time,—some alarm was created lest you should repeat the dose. The surveyor who wrote to whitewash Lord Portman should have had the candour to state what his lordship's new cottages were built of,—namely, mud; and why this material was selected,—namely, that the work could be done one-third cheaper (the Ham Hill quarries are but two miles off), and that all labourers residing in them are weekly tenants (we know what that means,—no trade unionisms, no independence), and liable to a week's notice to quit. But the surveyor might have gone to the adjoining village of East Chinnock, which belongs to Lord Portman now, as it did then, and he would have found there, as now, similar hovels to those of West Chinnock. The first thing the visitor will notice at East Chinnock is a large new tavern, called the Portman Arms, with a tap-room large enough to contain all the adult male farm-labourers in the parish. I say *male* farm-labourers, because there are still women employed in the fields at about 5*s.* per week, the men getting 10*s.*; but loss of time, through bad weather, makes their wages nearer 3*s.* 10*d.* and 8*s.* 6*d.* respectively! No doubt the kindly landlord and the large fireplace at the Portman Arms are boons to the boon companions thereof, the farm-labourers being doubtless glad to dry their clothes there after a wet day's work. But what are the poor wives and children to do,—left at home without money or mercy?

The first cottages I visited were three at Gibbon's Hill. There was Churchill, a very intelligent agricultural labourer, suffering from chronic rheumatism, and no wonder. He lived in a cottage with two rooms (so-called), the front door being so dilapidated that cats can easily creep in at any time; holes in door and window stuffed with rags and straw; floor partly rough stones, partly dirt; too dark to read without opening the door; no ceiling; and could not have been whitewashed for a quarter of a century. Had to go up the step-ladder to the loft or "chimmer," as my countrymen call it, in the best way I could. A good job the inmates had not wooden legs, or they would never get up to bed. The roof starts from within 2 ft. of the floor; they are obliged to keep the candle well in the centre to avoid setting fire to the roof, as it is only thatch.

The whole family had been brought up in this one bedroom until married, and so whole families are born and sleep until wedded, buried, migrated, or emigrated. The next cottage on Gibbon's Hill was about the same, only with a few more holes in the door, floor, windows, walls, and roof. On entering the last of the three I saw a poor, half-starved woman, working at gloving. I asked how much she could earn a week. Her reply was "Eightcenpence!" Her husband's wages being ten shillings for seven days' work, not quite three halfpence an hour! In a recess called a fireplace were *eight* dear little children, the eldest not more than ten years of age, mostly asleep until my entrance caused them to stir. I can hardly repeat the pitiful tale of the poor woman, who had scarce a penny to buy food for these children. Death would have been a happy release for them all. This woman, Mrs. Rendall, told me her rent was 1*s.* 6*d.* per week; no water to be had near. Arrangements for decency as well as water supply to be found down at the brook below, excepting that in the former case there might be hedgesides found nearer. On the thatch of these cottages, so well soaked with rain-water by the time of spring, the summer develops hundreds of mushroom growths, called "toad-stools," &c., and on the inside, fungous "leprosy" as the people call it, appears, the growth of which is watched as an interesting study by the children in bed. I then visited a place called the "Rookery"; there the people live in places ten times worse than pig-sties. The housetops are level with the field, the land bank forming the back wall; the houses are very dilapidated. I went into a house called "The College," whence a farm labourer and his wife had just been removed to Yeovil Workhouse, since which (as I was not sorry to hear) the man has been happily claimed by "welcome death." Living out his time,—his work done,—taken into the infirmary, put into a hot bath, physicked by the doctor, and soon packed into a 3*s.* 6*d.* oblong box and buried out of the way. There are more than twenty houses in East Chinnock without any w.c., water, or other sanitary arrangments. Sixty years ago there were over fifty freehold cottages in the place, all of which now belong to the noble landowner without payment! Ask the intelligent labourers of East Chinnock, so many of whom, I am happy to say, have joined the National Agricultural Labourers' Union, how long this state of things is to last!

Absentee landlordism is the cause of this poverty and decimation. How men calling themselves parsons and teachers, whether belonging to church or chapel, can live among such hideous poverty without making an outcry about it, I cannot tell. They are a disgrace to Christianity. In Somerset and adjoining counties there were thousands of good cottages and gardens sixty years ago which are now absorbed into large estates, and shelter pigs and cattle. These houses and lands have been "annexed" by various means. One way was to send a notice from the lord of the manor to the owner

to repair his property in such a time. This was done during harvest or some other inconvenient moment. The steward offers to do it for him if he will pay 1s. per annum "lord's rent." In course of time this is raised to an ordinary rent. Another dodge described to me by the labouring people of this neighbourhood was that while the man was at work the steward would give the wife 2s. on condition that she would give 1s. to his man that followed during the day, who duly gave her a receipt, thus turning the freeholder into a tenant. One woman shrewdly refused the 2s., and would have nothing to do with them. Then the steward ordered a trench to be dug the length of the cottage, 6 ft. wide and 5 ft. deep, and had it filled with water, to drive the man and wife from their freehold! To show the effect of the system carried out at the Chinnocks, the population of the three Chinnocks with Chisleborough has decreased nearly 500 out of a population of 1,900, as it was in 1831, while, if the people had been allowed to live and thrive in a healthy condition, they would naturally have increased to over 3,000 inhabitants. During this time some of the parsons of these decimated villages have done well, as I find by the old clergy list that they were in receipt of over 4,000*l.* a year between them, nor have the nobility and gentry of the district done badly. I do hope some alteration of the laws will effect a salutary change in the condition of the rural populations ere they cease to exist altogether. When the changes are made that will allow the people to live by their labour in decency, health, and comfort, you will hear no more of the agitations of G. MITCHELL,

"One from the Plough."

PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

1,184. J. A. Berly, Peckham-rye. A hermetic system of joints for pipes, &c. (Com. by L. Langlois, Louvain.) March 18, 1881.

1,201. E. A. Brydges, Upton. Apparatus for emptying cesspools. (Com. by N. Göetzenbrüegger, Vienna.) March 18, 1881.

1,207. P. Wood, West Bromwich. Lubricating dies or moulds for the manufacture of bricks, &c. March 19, 1881.

1,210. J. Bernard, Great Winchester-street. Baths. March 19, 1881.

1,221. A. Harvey & W. Borland, Glasgow. Safety-valves for kitchen boilers. March 19, 1881.

1,224. J. Couper & J. Elcock, Glasgow. Manufacture of ornamental glass. March 21, 1881.

1,249. P. O'Connor, Wavertree. Taps or cocks. March 22, 1881.

1,252. J. W. Lewis, Halifax. Lifting and lowering window-sashes. March 22, 1881.

1,277. H. G. Grant, Manchester. Furnaces or stoves. (Com. by A. Prevot, Bergerac, France.) March 23, 1881.

1,290. W. R. Comings, Upper Thames-street. Bells, knockers, letterplates, &c. March 23, 1881.

1,293. J. Watson, Rotherham. Kitchen ranges, &c. March 23, 1881.

1,302. T. Parker, Coalbrookdale. Grates and stoves. March 23, 1881.

1,304. J. Rettie, Hatton-garden. Building for scaffolding, &c. March 23, 1881.

1,309. A. C. Henderson, Southampton-buildings. Safety-wickets and gratings for street doors. (Com. by J. M. A. Montclar, Paris.) March 24, 1881.

1,314. G. L. Shorland, Manchester. Ventilation. March 24, 1881.

1,320. W. Lavender, Biddenham. Improved drainage. March 24, 1881.

1,325. A. M. Clark, Chancery-lane. Indicator locks. (Com. by the Eagle Lock Company, Terryville, U.S.A.) March 24, 1881.

1,327. T. Morgan, Charing-cross. Magazine heating-stove. (Com. by O. Elterich, Nuremberg, Bavaria.) March 24, 1881.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

March 22, 1881.

4,735. D. Brown, Huddersfield. Syphons and traps for sinks, drains, &c. Nov. 17, 1880.

4,752. J. Holgate, Burnley. Cutting and dressing stone, &c. Nov. 18, 1880.

4,761. H. Thompson, Islington. Domestic grates. Nov. 18, 1880.

4,849. L. W. Leeds, Woburn-place. Cooking apparatus. Nov. 23, 1880.

899. W. Wright, Plymouth. Valves for water, &c. March 2, 1881.

912. R. Adams, Great Dover-street. Converting vertically sliding window-sashes into revolving sashes. March 3, 1881.

924. H. J. Harrison, Liverpool. Strengthening cast-iron pillars, columns, girders, &c. March 4, 1881.

March 25, 1881.

4,806. W. Stainton, King's-cross. Pumping valves for hot-water apparatus. Nov. 20, 1880.

4,845. W. R. Lake, Southampton-buildings. Furnaces or fire-places. (Com. by J. Wolstenholme, Buffalo, U.S.A.) Nov. 22, 1880.

5,254. F. W. Reeves, South Kensington. Constructing the foundation of submerged structures. Dec. 15, 1880.

536. R. H. Gadgeon, Winchester. Chimney-piece coverings, &c. Feb. 8, 1881.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending March 26, 1881.

3,129. S. Bennett, Manchester. Making joints in lead pipes.

The ends of the pipes to be joined are expanded by a mandril, so as to receive a thin hollow core, or lining-pipe, round the middle of which is cast a thin lead ring. The two ends are then joined together over the ring, by the application of heat and pressure combined, upon the hollow core, so that when the joint is made this hollow core is embedded and soldered into the joint, and the whole forms one homogeneous mass. July 29th, 1880. Price 6d.

3,187. J. Brittain & T. Brittain, Chesterton. Machines for moulding and pressing bricks and tiles.

The pug-mill is fitted with knives, and delivers the clay in the same line as the shaft. Against the delivery-box there is a disc-wheel, fitted with four die-boxes, in which pistons are fitted. These die-boxes can be changed to suit the bricks or tiles required. The disc-wheel is vertical, and the motion is intermittent, so that while the moulds are filling the wheel is still. When they are full the wheel moves a quarter revolution, and two levers, which have flat plates at their ends, are brought to bear on the moulds, one on each side of the wheel, and great pressure is brought on the clay in the mould. The wheel then moves on another quarter revolution, and the bricks are ejected from the mould on to a table. August 4, 1880. Price 6d.

3,307. H. R. A. Mallock, Bramford Speke. Apparatus for indicating the level of water, &c.

This is applicable to closed tanks, &c. A bell or open-bottomed vessel is submerged in the liquid, and from the upper part of the bell is led a small air-tight pipe to a pressure-gauge, which will show the pressure to which the air in the bell is subjected, and therefore the height of the water. (*Pro. Pro.*) August 18, 1880. Price 2d.

3,332. S. Jones, Glandinorwig. Manufacture of slates.

To reduce the thickness of slates they are passed between rollers mounted in pairs, and every alternate pair covered with emery. These rollers revolve very fast, say 2,000 revolutions per minute. The first pair of rollers, covered with indiarubber, pass the slate to the emery-covered rollers, from which, again, a pair of indiarubber rollers receive it, to pass it on to another pair of emery-covered rollers. (*Pro. Pro.*) August 17, 1880. Price 2d.

* Compiled by Hart & Co., Patent Agents, 28, New Bridge-street, E.C.

THE COST AND RESULTS OF STRIKES.

ALTHOUGH I have had a wide acquaintance with, and experience amongst, the general body of working men in this country, together with many of their acknowledged leaders, yet I frankly confess that I never could clearly understand the fatuous recklessness with which they so readily squander their own resources in bitter warfare with capital. It has been said "working men have an impression that strikes pay in the long run," or they would not so willingly and determinedly undergo all the many sacrifices which a contest with capital involves. That the hope of gain is an important factor in most strikes must be admitted; but I am disposed to think that a spirit of bitterness and revenge against what is termed the "tyranny of capital" is the more powerful influence in determining a strike. So far as my experience goes, I have found that a large number of working men entertain the idea that they are unfairly dealt with by employers as a rule, and that the latter absorb more than what the former imagine is their fair share of profits between the cost of raw material and selling price of the finished article. That the greed or cupidity of some employers has given strength to a feeling of unfairness in the matter of wages cannot, I imagine, be successfully denied. Working men, however, should remember that, so long as the existing relations of employer and employed continue, and human nature remains what it is, so long will the spirit of selfishness (from which we workers are by no means free) continue to display itself. Practically labour is the servant of capital, and so long as working men are content that it remains so, so long must they submit to be ruled by capital in their daily work. Capital is strong because it can wait. Labour is weak because its necessities are immediate and pressing. The strong rules the weak. The servants of capital are sure in some way to be sharply reminded of their dependence. To fight against this dependence,—to enter into a bitter conflict with capital in a spirit of revenge, or for the rectification of some real or imagined wrong,—is surely, in the light of recent experiences, a most stupendous folly. The figures published by Mr. Chappell are startling in their grand total. But these pale before the enormous sums sacrificed by the men of Lancashire, amongst whom I am resident. Within the last four or five years, the builders, the cotton operatives, and, last and not least, the colliers, have unavailingly assaulted the strongholds of capital. Homes have been stripped and many irretrievably broken up, wives and children have endured untold misery and privation, debts have been incurred which will never be repaid, tens of thousands,—ay, hundreds of thousands,—of pounds of hard-earned wages have been sacrificed, and millions sterling of national wealth have been wasted in these struggles, and yet to-day capital rules and is supreme.

What is the lesson, then, which I think we working men ought to draw from these experiences of the past? Instead of discontentedly remaining the servants of capital, let us resolve to make capital our servant. At the close of the last weavers' strike a suggestion was made to continue a weekly levy of 2d. per loom to accumulate a fund for strike purposes. By all means continue the levy, but change the purpose. We are anxious to participate in the profits of capital, then let us apply the savings of labour to productive instead of destructive purposes. If the same energy, the same determination, the same spirit of self-denial and self-sacrifice recently exhibited by the colliers of South-west Lancashire, and their wives, were devoted to bringing about the reconciliation of capital with labour, and labour with capital, we might then fairly hope to arrive at that fair distribution of the profits of industrial enterprise which can never be attained by the destructive policy of strikes. SAXON DEYNE.

ELECTRIC LIGHTING OF THE CITY.

SIR,—As a mere passer-by, may I encroach on your space with a few observations on the electric lighting of the City? Approaching the Mansion House from Leadenhall-street, I was at once impressed with the immense advantage the very lofty lights on the ribbon iron standards have over the lower lights, although these latter have been mounted on special standards considerably higher than the gas-lamps.

I made experiments in reading a newspaper by the light of the lofty central electric lamp at the London Bridge end of King William-street, and found I could read it easily at ninety yards off the base of the standard.

In future lighting, I believe it would be well worth trying nothing but the principle of lighting from a great height, thereby economising in every way, for the light is diffused over a large space, and, by striking the whole surface of the fronts of the adjoining buildings, not only enhances the architectural effect, but is also utilised by being reflected into the street.

The lamps of the lesser heights give more light than is necessary immediately under them, and do not illuminate the upper parts of the adjoining buildings.

Judging from the power of the lofty lamps at 100 yards off, I should say that, at the most, two such lamps in King William-street, between the one opposite the Exchange and the one at the statue at the London Bridge end, would thoroughly light that street in lieu of the present five lower lamps, thus saving three lamps; and, very possibly, if the reflectors were made less acute, one such lamp in the centre of King William-street would be sufficient between the two end ones.

Lofty lamps in streets would, of course, have to be suspended by a bracket or slender iron bridge, across from the parapets of opposite houses. It would be a great advantage if all gas-lamps within the radius of the electric rays were turned out, as in the immediate circle of a gas-lamp a shadow seems to be cast, and the effect of the electric light is killed. This was

especially noticeable in St. Paul's Churchyard, where a dismal gas-lamp was burning at the south-west corner. Although this corner is only the same distance off an electric lamp as is the north-west corner, where there was no gas-lamp, the latter looked bright and cheerful in comparison, the rays of the gas tending to keep off the electric rays, and causing the effect above described.

Near the Mansion House the grouped gas-lights in the street crossings might also with advantage be extinguished, as they only mar the effect of the ample electric lighting.

I calculated that one of the lofty lights,—if the reflector were made to throw the rays at a more obtuse angle,—would do the work of thirty gas-lamps, which had been used to light the same area, and would do it much more effectively, both as to quality and brightness of light, and also as to the illuminating of the house-fronts, by bringing the whole height into brilliant relief, instead of about 12 ft. only, as by the old system of gas-lighting.

In conclusion, I should presume that lighting by gas in the City will not obtain again, and that lofty lights at greater intervals than now will be used in the future,—in which case, the cost between lighting by gas and by electricity will be, in comparison, much improved in the favour of electricity.

R. Stark Wilkinson, A.R.I.B.A.

RESTORATION OF CITY CHURCHES.

Sir,—In the communication which appeared in your impression of March 12th last, as to the restoration of the City churches, detailing at length the late restoration of St. Stephen's, Walbrook, rebuilt after the Fire of London in 1666 by Sir Christopher Wren, allusion is made as to the way in which St. Sepulchre's Church has been lately restored. The criticism of the latter is such as to infer that a wasteful expenditure of money had been made, and vexatious litigation also. The work of restoration would have been carried out at a considerably less cost had not the much-to-be-lamented differences between the churchwardens and the Vestry arisen, to which the sums of money spent in the Consistory Court of the Bishop of London will sadly testify.

I have little doubt that had not these arisen the so-called "host of distasteful incongruities" carried out would not now exist, and churchwardens who would have been expected to work in mutual harmony over such an undertaking as the restoration of their fine old parish church, would not now have to lament over the results of the unfortunate position taken between them: the misappropriation of money left by a former donor for the repair of the fabric, as well as the only partial instead of a more complete restoration of their church.

The restoration of the church, so far as it has been carried out, retains the leading features of the building previously to the Great Fire, which it was considered well to retain and restore (upon finding the ancient remains), though it is stated "that the advice tendered by so many architects and antiquaries was rejected by those in power." I think it quite sufficient for me only to refer to the reports laid before the Vestry and the Chancellor of the Diocese, in the Consistory Court, before alluded to, by two architects of eminence and repute in their profession,—Mr. Penrose, the surveyor to St. Paul's Cathedral, and Mr. Blomfield, both of whom have had to do more, perhaps, than any other architects, with churches in the City, and have an intimate acquaintance with them, and the works of Sir Christopher Wren. I am glad to have had the satisfaction of knowing, from their several reports to the Vestry, &c., that what was being done and about to be carried out was in accordance with their own views and treatment, had they been engaged to carry out the restoration of St. Sepulchre's Church.

As to the sizes of the two churches, and amounts expended upon each in their restoration, I will just observe that St. Sepulchre's being nearly three times the size in superficial area, they cannot be considered in any way parallel cases, to be judged together as to cost.

That Sir Christopher Wren was not engaged in the work of restoration to St. Sepulchre's Church I have shown by quotations from the parish vestry-books, published in the *Builder* of January 31, 1880, detailing by accounts there given the persons engaged and paid by the churchwardens during the carrying out of the work, &c., immediately after the Fire.

Arthur Billing, F.R.I.B.A.

THE PRESIDENCY OF THE INSTITUTE.

Sir,—It is with very great regret that not only I, but many others, have heard that Mr. Street is prepared to serve as President of the Institute if elected instead of the gentleman nominated by the Council.

No one feels more admiration than I do for the artistic talents and the rare personal abilities of Mr. Street, and it would give me unfeigned pleasure to join in a unanimous vote of the Fellows in his favour. But surely it is placing him in a position in every way unworthy of him to make his presidency depend upon the result of a struggle in which no point of principle—not even, so far as I know, the old cry of Gothic and Classic, is raised.

With regard to Mr. Horace Jones, there are many considerations, such as his large practice and extended experience, his personal ability, his official position, and above all his steady devotedness to the affairs of the Institute, which make him a very suitable man to hold the office of President. In addition to all this there is one point of very practical import. For very many years Mr. Horace Jones has been a consistent advocate of examinations for the profession of an architect. The scheme which has been adopted, and is to come into operation in 1882, is largely due to his initiative. He took an active part in putting it into shape, and, should he be in office during the year of its introduction, such support as it may require from the President of the institute will be ungrudgingly accorded. If, on the other hand, Mr. Street, who has never given any support to the proposal, and is understood to be unfavourable to it, be President, I do not say he will intentionally hamper or hinder it, but he cannot be expected to take any cordial part in its establishment, and the difference between a friendly and unfriendly president will be sufficient to have a most sensible effect on the future of the examinations. I submit that the Institute will be stultifying its past actions if at such a moment as this it goes out of its way to deal an undeserved blow in the face to the man whose proposal it is adopting by substituting for him another, who has taken no part in advocating or assisting the examinations.

T. Roger Smith.

Sir,—A large number of the Fellows of the R.I.B.A., who think that Mr. Street's claims should not be passed over in consequence of his having, by retiring from the Council list of Vice-Presidents, shown his disinclination to accept any nomination by mere order of seniority under the new by-law, have issued a circular to the Fellows inviting them to support him. It is but right to add that, in addition to, as we think, Mr. Street's pre-eminent claims to the office, Mr. Street would this year have been the senior Vice-President; and, had he not retired, entitled to nomination as President under the existing by-law.

Robert W. Edis, F.S.A.

BOILER EXPLOSIONS.

Sir,—A great deal has been written in your valuable paper on the above subject this year, and opinions expressed as to the merits of the Yankee and English systems of arranging heating apparatus. As a practical man who has studied the subject for many years, I beg to be allowed to make this description of the two systems to show that the advantage lies in the old English system. When the Yankee system was introduced, I tried it, but experience has induced me to give it up in favour of the old English system.

To prevent explosion and to ensure the continual working of the apparatus, two things are necessary. (1.) That the supply of cold water to feed the boiler should be continual. (2.) That there should be no obstruction in the pipes, or any part of the apparatus. Now, the chief cause of explosions, and the only one we will now consider, is obstruction of the pipes through ice; and the system which admits of the least chance of freezing, other things being equal, is the best. In the Yankee system the circulating tank is placed as near the boiler as convenient, with flow and return pipes between the two. A pipe is carried from the top of the circulating tank over the house to the points where hot water is required, and returns to the boiler. Through this pipe there is a constant circulation of hot water. The expansion-pipe is carried from the highest point of this circulating-pipe to the roof, or to the cold-water cistern. When this pipe is of any length, as there is no circulation in it, the water becomes cold and is liable to freeze. The cold-water cistern being in the roof, without anything warm near it, is also liable to freeze, as is the feed-pipe going from it to supply the boiler. Supposing the supply to be frozen, what is the result? No more water can be drawn than will empty the pipes down to the lowest draw-off tap, and you know something is wrong. The boiler and circulating-tank are still full, and it would take some days or weeks to evaporate, and leave space for steam to accumulate, and, provided the expansion-pipe were frozen, the steam could escape at the safety-valve.

This system, therefore admits of freezing in the upper part of the pipes, but provides well against explosion. In the old English system the circulating tank is placed close to the cold-water cistern in the roof of the house. The flow-pipe is taken to the various points where hot water is required and up to the circulating tank; a pipe returns from the circulating tank to the boiler. The expansion-pipe is carried from the top of the circulating-tank and turns over into the cold-water cistern. The supply from the cold-water cistern to the circulating-tank is a short piece of pipe bent like the letter U. The heat radiated from the circulating-tank will prevent the cold-water cistern and pipes from freezing, or reduce the chance to the minimum, and there being a circulation of hot water throughout the pipes, there is little chance of their freezing. But should the pipes freeze, what is the result? As in the Yankee system, no water can be drawn except to empty the pipes to the lowest draw-off tap. The boiler would remain full until steam was generated, which would escape, as in the Yankee system, at the expansion-pipe or the safety-valve; and in the meantime, not being able to draw water would be a warning that something was wrong. Therefore this system provides against explosion and reduces the chance of freezing to the minimum, and it is this reduction in the chance of freezing which gives it the advantage over the Yankee system.

F. Ball.

OBLIGATORY EXAMINATIONS, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Sir,—I have been expecting to see in the *Builder* some letters from the 2,000 architects who are not members of the Institute (mentioned in the opening address by the President, Mr. John Whichcord, F.S.A.), giving some reason why they do not join.

As an old member of the profession, for more than thirty years (although not an F.R.I.B.A.), I venture to make a few remarks that occur to me, and perhaps others may be induced to give their ideas, if you can kindly find space for them.

1. I would observe that the proposed examinations are not *compulsory* on all architect's, and do not therefore give a legal position or rank, as in the case of Law and Medicine; and therefore will not prevent any one still being employed and practising as an architect.

2. Men of advanced years, and who have long practised, have no need to risk a doubtful benefit; because, though experienced, they might fail in some matters to compete with younger men almost fresh from our universities or schools.

3. Some provision should be made to meet this difficulty.

4. The fees to be paid would in many cases be a burden to those blessed with a *large* family and a *small* practice, and would be more profitably invested in life assurance for their future benefit.

May I further suggest,—

5. That a system of life insurance might be adopted to meet the case of those mentioned in Section 4, so that their subscriptions would practically be an ultimate benefit to all concerned.

Philip Barratt Lee.

DRAWING ON PARCHMENT.

Sir,—Rub the parchment over with powdered chalk, then wipe off with a wet cloth; transfer the plan on to the parchment by means of a black sheet composed of thin tracing-paper, coated with common black lead (being careful that the lead is not too black); then colour as you choose, first putting a drop of ox gall in the colour; afterwards ink in, also having gall in the ink. I never found this process to fail.

Walter Horne.

WIDENING OF LITTLE QUEEN-STREET.

SIR,—Permit me to correct some misapprehensions which must undoubtedly be produced by the letter of Mr. Wyatt, in your last week's issue.

The statement that "the St. Giles's district is a very poor one, the rates and taxes amounting to the enormous average of 50 per cent. on the rents of houses in the neighbourhood," is, I maintain, misleading on the one hand, and imaginative, at least, on the other; misleading, as creating an impression that the St. Giles's parish stood alone, instead of being, as it is, united to its wealthy neighbouring parish of St. George and district of Bloomsbury, which of necessity share all its burdens. How, then, can it be called a "very poor district"? It is imaginative, I say, and I challenge Mr. Wyatt to show that the rates have ever exceeded 5s. 2d. in the pound, their present amount, and this, bear in mind, upon the assessment, a very different thing, indeed, to the rental. I think a member of the Local Board, who may be presumed to speak with authority, should be more careful as to the strict accuracy of his statements. Even if Mr. Wyatt adds the Queen's taxes, which have nothing on earth to do with the matter in question, he cannot then bring himself within any approach to accuracy.

As to the improvements being of "no permanent use," the obstruction being once removed will have proved to have been temporary; if the improvement is equally so, the money will not be wasted.

Now what the advocates of the improvement urge is this, that both the local and the Metropolitan Boards of Works have declared in favour of it, and that repeatedly; and if I am correctly informed it was only on a third occasion that the opponents mustered sufficiently at the Local Board to pass an adverse vote, which latter, I trust, will be rescinded at their meeting next week.

I charge no one with improper motives, but it is suggested that some of those who have opposed it would be pecuniarily interested, and to no slight extent, in some alternative scheme.

A word as to the cost. With the proposed contribution from the Metropolitan Board of Works, this would be but a mere trifle; in fact, but a fraction of a penny in the pound, and I maintain that this ought not to stand in the way of carrying out such a valuable and real improvement as this would be. Nor should it delay it while alternative schemes of a less practical and more doubtful character wait their prospective and distant solution.

NEWTON WILSON, Chairman of Committee.

CHARGES BY WATER COMPANIES.

SIR,—During the last week I have been engaged upon some repairs to a house in the neighbourhood of Russell-square: upon Monday last an official of the New River Water Company called and asked me whether I had paid anything in respect of deposit for the water about to be consumed during the repairs. I informed the man that I had not; and he thereupon told me that unless a certain sum was paid the following day (amount to be fixed by the collector) our water supply would be cut off. I may mention that the house is inhabited, and there are no arrears. In troubling you with this letter, I wish to know if there be any by-law existing which empowers a water company to charge for water consumed during repairs (*i.e.*, to an inhabited house)? If so, it seems to me that the water companies have omitted one very important feature in their rules, that is, the charge to be fixed for water used in washing down the very large fronts of some of our painted houses of business. A BUILDER.

P.S.—I called upon the collector as I was ordered, and he refused to show any book authorising him to make such a demand.

STAINED OAK.

SIR,—Will some one inform me whether the practice of staining new oak, in order to give it the effect of old work, arrests or prevents the natural and beautiful process of darkening by age? W. S.

ARCHITECTS AND COMPANIES.

IN RE THE VICTORIA MANSIONS COMPANY.

THIS was an application in the High Court of Justice, Chancery Division, before Mr. Justice Fry, in the winding-up of the Victoria Mansions Company, by Mr. John Norton, that his name might be removed from the list of contributories.

The company was formed in 1877 for the purpose of building mansions in Victoria-street upon a freehold site which was purchased for a sum of 37,500*l.* The capital of the company was to be 100,000*l.*, in 5,000 shares of 20*l.* each. In October, 1878, the present applicant, who is an architect, was consulted by the directors as to the erection of a block of offices, and a contract was arranged by him with the builders at the sum of 22,535*l.*, upon which his commission would, when complete, be 1,126*l.* Mr. Norton then wrote to the secretary saying that if he were employed upon the work he would be willing to take 1,000*l.* in shares, meaning fully paid-up shares, to be handed to him in equal proportions of shares to cash payments as the commission became due. In July, 1878, he received a letter from the secretary stating that he had been appointed architect. At that time the company were indebted to him for a portion of the work which had already been done. As there had been no formal application for shares, none were actually allotted to Mr. Norton. The money due to him had gone on increasing, and he contended that he ought not to be placed on the list of contributories for the shares.

Mr. Higgins, Q.C., and Mr. Methold appeared for Mr. Norton; and Mr. Glasse, Q.C., and Mr. Davenport for the official liquidator.

Mr. Justice Fry was of opinion that the real nature of the bargain was that Mr. Norton was to take shares to the value of 1,000*l.*, and he was to be at liberty to treat his commission as a set-off for the value of the shares. There was a contract to that effect, and the mode in which the transaction was carried out, and the letters written by Mr. Norton, were, in his lordship's opinion, a waiver of the form of issuing shares. The result was that Mr. Norton's name must remain upon the list of contributories for fifty shares, but the amount due upon them be credited with the amount due to him for commission to the extent of 1,000*l.*

SIZE OF SEWERS.

APPEAL.—KELBY *v.* THE WANDSWORTH DISTRICT BOARD OF WORKS.

A CASE of interest to those engaged in the development of building estates has just been the subject of an appeal to the Metropolitan Board of Works.

A new road is being formed on the south side of Batterses Park by the appellant, the lessee from Her Majesty's Commissioner of Public Works and Buildings. The length of the road is about 800 ft., and it is proposed to erect on each side thereof about 30 eight or ten-roomed houses. Three applications had been made to the Wandsworth District Board of Works to approve respectively a 12 in., 15 in., and 18 in. stoneware-pipe sewer, but all had been refused, the Local Board requiring a 3 ft. 6 in. by 2 ft. brick egg-shaped sewer encased in 6 in. of Portland cement concrete.

The appeal against this requirement was conducted by Mr. Ernest Turner, architect, who submitted that a sewer of this size was very largely in excess of what was necessary, and involved a great outlay; moreover, that large sewers for the drainage of small areas were most objectionable on sanitary grounds, and altogether at variance from the teaching of modern sanitary science and the general principles and more recent practice of the Metropolitan Board of Works.

Mr. Corselis, solicitor, appeared on behalf of the Wandsworth Board. The appeal was allowed, the Metropolitan Board of Works Committee intimating that the use of 18-in. pipes would be approved.

COMPETITIONS.

Suffolk County Asylum.—**The result of the competition for additions to the above has been that several sets of plans were sent in, and those prepared by Messrs. John Giles & Gough were selected by the magistrates. The additions are for 150 patients.**

King's Lynn Coffee Tavern Company.—**The directors of this company have adopted the plans of Messrs. Adams & Son, architects, for a new tavern in St. Ann's-street, upon the land they have purchased there for that purpose. The new building will contain in addition to the ordinary accommodation, billiard and other rooms, and a number of sleeping apartments.**

Edinburgh.—Colston-street U. P. Church.—**Some months ago plans were sought for a church for the Colston-street U. P. congregation, Edinburgh, and in answer over twenty sets of designs were submitted, some of them being from architects in Glasgow. After some discussion, three plans were selected for further consideration, and on Monday night last the congregation met and unanimously agreed to adopt the design recommended by the Managers and the Church Extension Committee of the U. P. Synod, and which proved to be by Mr. Andrew Dewar, architect, Edinburgh. The plan of the selected design is in the shape of a horse-shoe, and accommodates 500 on the ground-floor and 300 in the gallery. The cost is estimated at about 3,500*l.***

PROVINCIAL NEWS.

Abergavenny Asylum, Wales.—**Plans for extensive additions have been approved by the Secretary of State, and are presented at Brecon and other sessions this week. They include, besides additional wards for patients, new dining-hall, chapel, &c. The architects are Messrs. Giles & Gough, of Craven-street, Charing-cross.**

Gloucestershire New Asylum.—**The works of the first portion of the new buildings were commenced last week, and are to be completed in eighteen months. The architects are Messrs. Giles & Gough.**

Upper Easton, Bristol.—**The new class-rooms which have been added to St. Gabriel's Schools, Upper Easton, have been opened. The schools were erected in 1872, but in consequence of the rapid increase of the population of the neighbourhood, they have become too small to properly accommodate the children who flock to them for instruction, and, after much consideration, it was resolved by the managers to erect new buildings, so as to give room for 150 additional scholars. The plans for the extension of the existing premises were furnished by Messrs. Trew & Sons. The contract was taken by Mr. E. M. Hodges, of Newfoundland-road. The class-rooms are built of Cattybrook red and coloured face-bricks, with Westwood stone dressings, corresponding with the materials used in the main schools. The cost has been about 3*l.* per head.**

Books.

The Old and New Churches of London. Collected and arranged by ALFRED CAPES, Architect; with an Essay on the Principles of Architectural Beauty by the Rev. J. M. CAPES, M.A. Bumpus, 158, Oxford-street. 1880.

UNDER this title Mr. Alfred Capes has brought together illustrations of some of the existing remains of early church architecture in London, seventeen in number, and nineteen views of churches built between 1844 and the present time. Some of the engravings have appeared elsewhere, as, for example, in our own pages, and it was only by adopting this course, indeed, that a book so richly illustrated could have been produced at the price charged with any reasonable prospect of remuneration. It ought to interest not merely many of the frequenters and officials of the various churches illustrated, but architects and others glad to have under their eye at one view a large number of suggestive examples.

The introductory Essay on the principles of Architectural Beauty, by the Rev. J. M. Capes, may serve us as a text on a future occasion.

VARIORUM.

"LATHE-WORK, a practical Treatise on the Art of Turning," by Paul N. Hasluck (Crosby Lockwood & Co.), is evidently written from personal experience, and gives a large amount of just that sort of information which beginners at the lathe require. A lathe in a country-house where there are young people is a most valuable adjunct, and this is just the book to go with it.

——A Memorial of the Exhibition of Wood Carving, lately held at the Royal Albert Hall, is now being prepared by Mr. George Alfred Rogers, one of the honorary secretaries. It will consist of a "General Account of the Exhibition," "A List of Exhibitors," and a large number of illustrations of the most interesting specimens of Mediæval and Renaissance art.

——We have so often commended Messrs. Collingridge's "City of London Directory," that of its issue for 1881 we need merely say that in all its various departments it is carefully kept abreast of the time. The Street List is clearly arranged. The Trades List is unusually complete, and the classification concise. Of the Livery Companies of London valuable information, not to be found in any other work, is given; and the List of Bankrupts, and of Traders who have compounded with their creditors during the year, renders the "City of London Directory" of much value as a permanent book of reference to every one engaged in business.

Miscellanea.

Sheffield.—**At the annual meeting of the Sheffield Church Extension Society, on the 3rd ult., Mr. C. E. Vickers read the annual report, which stated that the erection of the Attercliffe-road District Church was commenced in April last, and is progressing favourably. The committee hope that it will be finished and consecrated during the present year. This church will accommodate 654 persons, and the contract price is 5,000*l.*, which sum includes all internal fittings, warming, lighting, boundary fences, gates, and architect's commission. Thirteen sets of plans were submitted in competition for the Langsett-road district church. The committee selected the plans sent in by Mr. J. D. Webster. This church is to be built of brick and stone, and is to be dedicated to St. Bartholomew. The York Diocesan Society have granted 386*l.* towards the building fund of the church. It is being constructed to hold 640 persons, and the total cost is fixed at 3,727*l.***

The Ladies' Work Society.—**This Society, the home of which is in Sloane-street (No. 31), has just now produced an elaborate work in the shape of an embroidered satin pianoforte cover. The design has been adopted by Mr. Cutler from a fine piece of Spanish work, and is admirably worked out in satin-stitch on satin. The colours are harmonious, and the general tone very delicate and agreeable. The cost will be about 150*l.* The cover is intended as a silver-wedding present. Some interesting works of much less cost, some of them designed by H.R.H. the Princess Louise, the president of the society, are to be seen at the rooms. The object of the society, it need scarcely be mentioned, is to afford profitable occupation to ladies who are in need of it.**

"Caravan" Shop Fronts.—Before the Eastbourne bench of magistrates the other day, Mr. George Rumball, furniture dealer, of Seaside, appeared to two informations, one charging him with having erected certain new buildings at Seaside without the consent of the Urban authority, and the other with having built a certain addition to the houses 160 and 164, without the consent of the said authority. Defendant pleaded not guilty. Mr. Lucas supported the prosecution on behalf of the Local Board, and in opening the case said, Mr. Rumball, the defendant, some time in January last built an addition to his house No. 164, Seaside. The building was constructed of wood and rested on wheels—it was 13 ft. high and projected about 9 ft. beyond the houses on either side. In the following month, February, he commenced building an addition to his house No. 160. That building was similar in all respects to the other, except that the floor was nailed to wooden joists which rested on the ground. The buildings to a great extent excluded the light and air from the adjoining houses, and being composed of wood, a combustible substance, tended to depreciate in value the neighbouring property. The defendant had not obtained the consent of the Local Board, nor had he deposited any plans as required by the by-laws. The Chairman, after consulting with his colleagues, said the Bench, in deciding this case, had to determine, in the first place, if the construction which the defendant called a caravan was a building within the terms of the Act. They held that it was, and that it was a new building and not an addition to an old house. The penalty they had decided to impose was 2*l.*, and 1s. per day during the interval between the notice and the summons. Defendant was at liberty to take a case to a Superior Court. Mr. Rumball: That is what I intend doing, sir. The Chairman: It is quite a case for legal argument. The practical result is, we dismiss the information for making an addition to a building. The conviction is under By-law 26, for not giving notice of your intention to erect a new building.

The International Medical and Sanitary Exhibition.—The allotment of space to intending exhibitors is now being rapidly proceeded with, and at the meeting of the committee on Wednesday last (April 6th) the names of 225 exhibitors were registered and approved as follows:—Medical Section, 115; Sanitary Section, 94; Miscellaneous Section, 16. In addition to the wall space and counter space taken, upwards of 1,200 feet frontage of floor space will be allotted to the above exhibitors, representing an area of no less than 8,000 square feet. Important exhibits are announced from France, Germany, Austria, Italy, Belgium, Holland, Norway, and the United States. The committee have decided, in order to meet the convenience of intending exhibitors, to extend the time for receiving applications for space, which may now be sent in up to Saturday, April 16th. An index of exhibitors and articles to be exhibited is being printed, and will be published for distribution while the descriptive catalogue is being compiled, and as soon as the whole of the space is allotted a plan of the Exhibition Buildings at South Kensington will be published with the names of exhibitors on the space allotted them.

The Goldsmiths' Company.—This company, with a view to the encouragement of technical education in the design and execution of works in the precious metals, have settled a liberal programme of prizes for the current year. Their total value is over 300*l.*, in amounts ranging between 50*l.* and 10*l.* The prizes will be awarded in December next, and objects of art, &c., should be sent in by November, to the clerk (Mr. W. Prideaux) at Goldsmiths' Hall. The company have also resolved that a travelling scholarship of 100*l.* may be awarded to a student who has shown exceptional talent, and who shall have obtained prizes for design or modelling in three competitions, in order to enable him to study art in the precious metals on the Continent.—*City Press.*

Kidderminster Sewage Farm.—The Mayor of Kidderminster and the members of the Drainage Committee lately paid a visit of inspection to the work now being done at the Sewage Farm. They were accompanied by Mr. Pritchard (the engineer), and Mr. Arthur Comber (the Borough Surveyor). The Council have been authorised to expend £3,000, and Mr. George Law has undertaken the contract to deep-drain the farm and to put in a system of carriers for the distribution of the sewage.

Society of British Artists.—The Exhibition in the Suffolk-street Galleries was opened to the public on Monday last. We reserve our notice for a week.

The People's Entertainment Society.—A meeting, convened by the committee of this society, was held on Saturday afternoon at the Grosvenor Gallery, and was well attended. The chair was taken by Sir Coutts Lindsay, and among those present were the Earl of Shaftesbury, Viscount Folkestone, M.P., Mr. T. Brassey, M.P., Mr. Albert Grey, M.P., Sir Julius Benedict, Sir H. Cole, C.B., Mr. Randegger, Mr. Henry Leslie, and Mr. Charles C. Bethune, president of the executive committee. The report stated that the society, which was in its third season, was giving concerts every Saturday evening at Lammas Hall, Battersea; Bolingbroke Hall, Clapham; the School-room, Star-corner, Bermondsey; and the Dartmouth Hall, Westminster. During the past year similar societies had been formed in Manchester, Newcastle, and Winchester, and arrangements were being made for starting others in Liverpool and Nottingham. The report added that as the committee had received such numerous and convincing proofs of the vitality of the movement and of the real good accomplished, and had found their audiences increase instead of falling off, they had no longer any hesitation in commending the cause to the attention of all who were interested in the work of raising the tastes of the people and of promoting good feeling between the different classes. The claims of the society to public support were advocated by the chairman, Mr. Bethune (who said that the organisation had a capital lot of men ready to do as much work as was asked of them, but that money was required for necessary expenses), the Earl of Shaftesbury, Mr. Henry Leslie, and others, and resolutions to a similar effect were adopted before the meeting broke up.

Building Stone in Canada.—According to the *Colonies and India*, a discovery has recently been made in the neighbourhood of Winnipeg which is of considerable importance in view of the rapid increase of population, not only in Winnipeg, but in the numerous settlements or townships which are springing up in all parts of Manitoba. Hitherto, nearly all the buildings have been mainly constructed of wood, the only available building stone being imported from the United States at a heavy cost. The stone from the newly-discovered quarry has been submitted to various tests, and in point of resistance to pressure, absence of absorption, and (what is particularly necessary in severe winters) resistance to the effects of frost, is said to answer every requirement. At present but two beds have been worked, the stone from the lower being soft, and admirably adapted for carving, but hardening on exposure to the air; while that from the upper bed is said to be suited for heavy masonry. A third underlying bed has not been tested, but is expected to prove of even better quality than the others. The quarry is situated close to the river Assiniboine, within a short distance of Winnipeg, whither it can be easily conveyed by water at little cost.

TENDERS

For the erection of a theatre, with subsidiary and other premises, at Queen's-road, Hastings, for Mr. George Gaze. Messrs. Cross & Wells, architects, Hastings; Mr. C. J. Phipps, consulting architect:—

King & Son	£11,980 8 0
Patman & Fotheringham	10,377 0 0
Womersley	9,600 0 0
Geary	9,522 0 0
Cruttenden	9,346 0 0
Higgs	9,250 0 0
Vidler	9,237 0 0
Howell & Son	9,1[illegible]0 0 0
Jones & Co.	8,970 0 0
Rodda	8,680 0 0

For the Cottage of Content public-house, Rodney-road, Walworth, for Mr. W. Whetherley. Mr. W. T. Farthing, architect. Quantities supplied:—

Marsland	£3,850 0 0
Kirk & Randall	3,841 0 0
Patman & Fotheringham	3,600 0 0
Jackson & Todd	3,582 0 0
Palmer & Sons	3,495 0 0
Pickersgill Bros.	3,379 0 0
Spencer & Co.	3,288 0 0
Gill (accepted)	3,247 0 0

For the New Globe Hotel, Margate, for Mr. F. Snelling. Mr. Edward Clark, architect:—

Contract No. 1, *Foundations.*

G. & R. Rolfe, Margate	£5,128 16 8
J. W. Sawyer, London	4,942 0 0
Macey, London	4,505 0 0
Mark Manley, London	4,156 0 0
Paramor & Son, Margate	4,000 0 0
Denne, Upper Walmer	3,937 0 0
W. J. Adcock, Dover (accepted)	3,948 1 0

For building brick barrel-drain in Malthouse-lane, Aldershot. Mr. W. L. Coulson, surveyor:—

Irvin Cranston, Aldershot	£159 0 0
William Garland, Aldershot	139 0 0
George Kemp, Aldershot (accepted)	129 0 0

For new chapel, operating-room, and other works at the Royal Berkshire Hospital, Reading. Messrs. Morris & Stallwood, architects. Quantities supplied:—

Clarke & Bracey	£4,636 0 0
Braid & Co.	4,635 0 0
Brass	4,475 0 0
Shaw	4,239 0 0
Clements	4,100 0 0
Rider & Sons	4,099 0 0
R. Silver & Sons	4,057 0 0
Claridge	3,850 0 0
Filewood	3,794 0 0
Parnell & Son	3,719 0 0
W. H. Simmonds	3,663 0 0
Kimberley	3,653 0 0
Searle	3,557 18 0
Sheppard (accepted)	3,482 0 0

For rebuilding No. 25, Newington-butts, for Mr. Charles Polden. Messrs. Muggeridge & Powell, architects:—

Fisher	£1,147 0 0
Smith	1,057 0 0
Canning & Mullins (too late)	996 0 0
Castle	990 0 0
Pyke	905 0 0
Burman (accepted)	875 0 0

For alterations, &c., to London House, Clapham Common, for the London and South-Western Banking Company. Messrs. I'Anson & Sons, architects. Quantities by Mr. D. Campbell:—

		Add for White Facings.
Sawyer	£1,383 0 0	£30 0 0
Smith & Sons	1,119 0 0	47 10 0
McLachlan & Sons	1,080 0 0	60 0 0

For alterations and additions to the Brunswick Arms Public House, Brunswick-road, Upper Holloway, for Messrs. Watney & Co., Stag Brewery, Pimlico. Mr. C. W. Bovis, architect. Quantities supplied by Mr. J. M. Hawkins:—

Taylor	£936 0 0
Anley	909 0 0
Spencer & Co.	895 0 0
Lamble	793 0 0
Grant (accepted)	789 0 0

For new premises, Middle Row-place, Holborn, for Messrs. Witherby & Co. Mr. McKillop, architect:—

Mark	£4,374 0 0
Patman & Fotheringham	4,200 0 0
Colls & Son	3,870 0 0
Marr	3,837 0 0
Bamford	3,780 0 0
Smith	3,389 0 0

For new stabling, &c., Mansfield-place, Kentish Town, for Mr. Birch. Mr. Bolton, architect:—

Mark	£3,646 0 0
Crockett	3,500 0 0
Marsland	3,450 0 0
Richieurs & Mount	3,396 0 0
White	3,240 0 0
Holloway	3,187 0 0
Gould & Brand	3,185 0 0
Heath	3,052 0 0
Ward & Lamble	2,783 0 0
Beale	2,688 0 0

For metalling, kerbing, channelling, draining, lighting, and tar-paving Pickford-street and Crimea-road, Aldershot. Mr. W. L. Coulson, surveyor:—

Irvin Cranston, Aldershot	£762 0 0
Thomas Free, High Wycombe*	643 0 0

* Accepted.

For metalling, kerbing, channelling draining, lighting, and tar-paving Union Terrace, Aldershot. Mr. W. L. Coulson, surveyor:—

Thomas Free	£73 16 10
Irvin Cranston (accepted)	65 10 0

For alterations to the Three Bucks Tavern, Old Jewry, City, for Messrs. Webb & Moore. Mr. J. Viney, architect:—

Burch & Moor (accepted)	£333 0 0

For building a villa residence, Winchmore-hill, for Mr. Jardine. Mr. J. Viney, architect:—

Burch & Moor (accepted)	£595 0 0

For alterations to the Clarence Tavern, Stoke Newington, for Mr. Hough. Messrs. Kerslake & Mortimer, architects:—

Burch & Moor (accepted)	£460 12 0

For the erection of a cottage-villa, Wilmington, Kent. Quantities by Mr. Joseph Rookwood. Mr. Alfred R. Pite, architect:—

Stickland Bros.	£1,045 0 0
Hooper	995 0 0
Evans Bros.	985 0 0
Gumbrell	938 0 0
Rose & Hutton	935 0 0
Beale	865 0 0
Clark	864 0 0
Beeton	813 0 0

For alterations and additions to No. 16, South Molton-street, for Mr. Baylis. Mr. Hambridge, architect. Quantities supplied by Mr. C. Stanger:—

		Alternative Estimate.
Grover	£1,598 0 0	£1,498 0 0
J. & H. Cocks	1,588 0 0	1,478 0 0
Bull & Cooper	1,497 0 0	1,396 0 0
Manley	1,495 0 0	1,356 0 0
Bolding	1,464 0 0	1,377 0 0
Patman & Fotheringham	1,398 0 0	1,303 0 0
Nixon	1,338 0 0	1,252 0 0
Taylor & Parfitt	1,315 0 0	1,235 0 0
Sharp & Mills	1,247 0 0	1,143 0 0
Drake	1,230 0 0	1,130 0 0

For alterations and additions to coach-houses and stables at Penge. Mr. T. W. Garrood architect:—

Parham	£275 0 0
Mears	235 0 0
Kemp	177 10 0
Wootton	167 0 0
Smith & Sons	158 0 0
Hollidge & Stuart (accepted)	150 0 0

For rebuilding the Prince's Head public-house, and erecting three shops, with residences, &c. York-road, Battersea. Mr. H. J. Newton, architect:—

Walker	£6,070	0	0
Taylor	5,920	0	0
Grimwood	5,895	0	0
Shurmur	5,868	0	0
Langmead & Way	5,765	0	0
Godden	5,715	0	0
Lamble	5,679	0	0
Mattock Bros.	5,333	0	0
Burman	5,207	0	0
Cooper	4,995	0	0
Gill	4,987	0	0
Pickersgill (accepted)	4,944	0	0

For the erection of eight houses and shops in Mare-street, and three shops in the Grove, Hackney. Mr. Sydney L. Walters, architect:—

Lawrence	£8,880	0	0
Conder	8,798	0	0
Brown	8,750	0	0
Bangs	8,600	0	0
Morter	8,557	0	0
Shurmur	7,785	0	0
Johnson	7,651	0	0
Boyce	7,450	0	0

For alterations to the Duke's Head public-house, Whitechapel. Messrs. Wilson, Son, & Aldwinckle, architects:—

Johnson	£1,183	10	0
Shurmur	1,133	0	0
Hearle	1,055	0	0

For building shed at rear of No. 1, Cable-street, for Messrs. Fairclough & Son. Messrs. Wilson, Son, & Aldwinckle, architects:—

Palmer	£745	0	0
Colman	715	0	0
Hearle	676	0	0
Cox	642	0	0
Shurmur	639	0	0

For alterations, &c., to the Gun public-house, Brushfield-street. Messrs. Wilson, Son, & Aldwinckle, architects:—

Shurmur	£360	0	0
Marr	284	0	0

For the erection of two semi-detached dwellings at Upton Pyne, Devon, for Sir S. H. Northcote, bart., M.P. Mr. James Jerman, architect:—

H. J. Scadding	£750	0	0
J. R. Gibbard	587	0	0
Dennis & Short	520	19	0
Webber & Stephens (accepted)	474	12	0

For the erection of a new church at Burham, Kent. Mr. E. W. Stephens, architect:—

Wallis & Clements, Maidstone	£4,970	0	0
Foord & Son, Rochester	4,763	0	0
Avard, Maidstone	4,667	0	0
Callund & Son, Rochester	4,650	0	0
Vaughan, Maidstone	4,591	0	0
Hammond, Aylesford	4,444	0	0
Naylar & Son, Rochester (accepted)	4,241	0	0

For four houses and shops in Brixton-road, for Mr. W. Foster. Mr. C. V. Hunter, architect. Quantities by Mr. R. Griggs:—

Cubitt	£5,985	0	0
Oliver	5,873	0	0
Rider & Son	5,848	0	0
Holliday	5,777	0	0
F. Higgs	5,682	0	0
Pack Bros.	5,617	0	0
Marsland & Sons	5,555	0	0
Larter & Son	5,344	0	0
J. Taylor (accepted)	5,167	0	0

For bullock-lairs at the Foreign Cattle Market, Deptford, for the Corporation of London. Mr. Horace Jones, architect. Quantities by Messrs. Nixon & Raven:—

McLachlan	£7,153	0	0
Higgs & Hill	6,999	0	0
F. Higgs	6,998	0	0
Perry & Co.	6,963	0	0
Dickenson	6,850	0	0
Nightingale	6,771	0	0
J. & J. Greenwood	6,529	0	0
Holland	6,500	0	0
J. Taylor	6,347	0	0
Gentry	6,295	0	0
Boyce	6,290	0	0
Kirk & Randall	6,120	0	0
Mowlem & Co.	6,107	0	0
Morter	5,937	0	0

For proposed new shop and residence, Tonbridge-road, Maidstone, for Mr. T. Banks. Mr. E. W. Stephens, architect:—

Simmonds, Maidstone	£2,380	0	0
Callund & Son, Rochester	2,375	0	0
Hammond, Aylesford	2,362	0	0
Naylar, Rochester	2,357	0	0
Elmore, Maidstone	2,340	0	0
Wallis & Clements, Maidstone	2,334	0	0
Vaughan, Maidstone	2,149	0	0
Cox, Bros., Maidstone	1,915	0	0
Avard, Maidstone	1,895	0	0

Accepted for the erection of new schools, outbuildings, and boundary walls for St. James's Parish, Darwen. Mr. W. Perry, architect:—

Masonry and Bricksetting.

Lloyd & Millward, Darwen	£900	0	0

Carpenter and Joiner's Work.

Lloyd & Millward	458	0	0

Slater's Work.

M. Eccles, Darwen	143	0	0

Plumbing and Glazing.

J. S. Briggs, Darwen	61	10	0

Plastering and Painting.

J. Watson, Darwen	90	0	0

For alterations to house, and the addition of cellar, shop, and rooms over same, on the forecourt of No. 190, Southwark Park-road, for Mr. J. Morgan. Mr. E. Crosse. architect:—

S. White (accepted)	£300	0	0

NOTICE TO ADVERTISERS.

GOOD FRIDAY.

"THE BUILDER" for the week ending APRIL 16th will be published on THURSDAY MORNING, 14th inst. Advertisements for insertion in that issue must therefore reach the Office before **THREE p.m.** *on WEDNESDAY, the 13th.*

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All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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Addressed to No. 46, Catherine-street, W.C.

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The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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